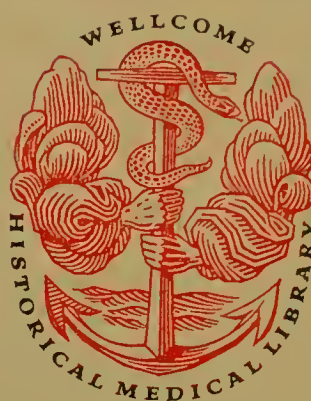


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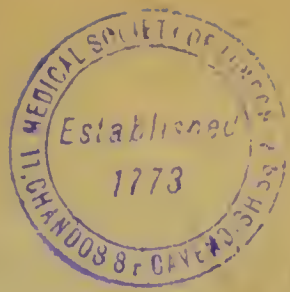




OUTLINES  
OF THE  
THEORY AND PRACTICE  
OF  
MIDWIFERY.

Printed by JOHN BROWN, }  
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OUTLINES  
OF THE  
THEORY AND PRACTICE  
OF  
MIDWIFERY.

BY  
ALEXANDER HAMILTON,

M.D. F.R.S. EDIN.

PROFESSOR OF MIDWIFERY IN THE UNIVERSITY, AND FELLOW OF  
THE ROYAL COLLEGE OF PHYSICIANS,  
EDINBURGH.

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FIFTH EDITION,

WITH  
NUMEROUS CORRECTIONS AND ALTERATIONS.

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EDINBURGH:

PRINTED FOR T. KAY, NO. 332. STRAND, LONDON;

AND SOLD BY W. CREECH, EDINBURGH.

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1803.



TO

*BARTHOLOMEW PARR, M.D.*

FELLOW OF THE ROYAL SOCIETY EDINBURGH,

PHYSICIAN

TO THE DEVON AND EXETER INFIRMARY, &c.

THESE

OUTLINES OF MIDWIFERY,

ARE RESPECTFULLY OFFERED,

AS A SMALL ACKNOWLEDGMENT

OF THE

FAVOURS CONFERRED BY HIM,

ON

HIS MUCH OBLIGED SERVANT,

EDINBURGH, }  
Dec. 12. 1795. }

THE AUTHOR.



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## P R E F A C E.

THE Author of the following work published, in the year 1775, a short compend, entitled, ELEMENTS OF MIDWIFERY, chiefly for the use of those who did him the honour to attend his lectures. In 1783, a new-impression of that treatise having been, for some time, called for, he was induced to extend his plan, so as to render the work useful to practitioners as well as pupils. With that intention he endeavoured, in the Outlines, to detail the most essential principles of the art relating to the management of women in the *pregnant* and *parturient* states.

In revising the Outlines for a fourth edition, the author found that many alterations were necessary; for some opinions he formerly entertained have been contradicted by experience, and many observations, he became convinced, required illustration. That edition, therefore, is as different from the former ones as they were from the *Elements*.

The

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The Author did not live to superintend this FIFTH EDITION, having been unexpectedly carried off by an inflammation of the lungs, in the 62d year of his age, on the 23d of May 1802.

The following conclusion of a short and imperfect account of his life, delivered to the Students of Midwifery in the University of Edinburgh, during that summer, by his Eldest Son †, is offered, for the purpose of holding out his example to the imitation of Young Practitioners, and not of publishing an eulogium upon his character.

“ In this rapid sketch, you must have observed that my dear Father, in his conduct, was regulated, as a man, by the great principles of the Christian religion, and as a medical practitioner, by professional zeal. In the former character, he was industrious, patient, prudent, temperate in every respect, thankful for favours bestowed upon him; forgiving of injuries; charitable in the most extensive sense of the word; impartial to his family; submissive to the will, and grateful

† The Reviser of this Edition.

grateful for the goodness and mercy, of his Creator.—In the latter respect, he was anxious, not only to make himself master of the principles of his profession, and to apply them extensively to the relief of those in distress; but also to appreciate, justly, the value of the modes of practice recommended by others; to alter them where erroneous, to improve them where deficient, and to communicate with fidelity what experience had taught him.

“ I shall not detail to you all that resulted from his having been swayed by such principles; I shall not say how much, as a practitioner and teacher, he was respected, and as a man he was esteemed; but I must take the liberty to point out the effects of this conduct upon his public situation and his private life.

“ When he arrived in Edinburgh, he had neither fortune nor friends; yet by his own virtue and industry, without the assistance of relations or the cabal of party, he attained the highest eminence in his profession.—He reared a large family in a  
style

style suitable to his rank; and he enjoyed, throughout the whole course of his life, the sublime satisfaction of loving his neighbour, and of loving his God.—He uniformly expressed his ardent wish, to live no longer than while he could be useful to his family and to the public;—and he bestowed his last moments, not in selfish attention to himself, but in consulting the welfare of his patients and his family, and in expressing his adoration of his Creator.”

EDINBURGH, }  
Mar. 12. 1803. }

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## OUTLINES

# OUTLINES OF MIDWIFERY.

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## PART I. ANATOMY AND PHYSIOLOGY.

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### CHAP I. OF THE PELVIS.

**T**HE human skeleton is divided into the Head, Trunk, and Extremities. The Head includes the Cranium and Face. The Trunk consists of the Spine, Thorax, and Bones of the Pelvis. The latter, which include also part of the Spine, are the more immediate objects of attention to the Practitioner of Midwifery.

The *Pelvis* is an irregular cavity, more nearly approaching to a cylindrical than any other figure ; and is chiefly composed

B of

of the *Ossa Innominata*, the *Os Sacrum*, and *Ossa Coccygis*. The two ossa innominata constitute the lateral and anterior parts; the os sacrum, and small range of bones called the *coccyx*, form the posterior part. This bony circumference includes a space which represents the figure of a basin, from whence the name PELVIS is derived.

To have an accurate knowledge of the Pelvis, it is necessary, first to describe separately the different parts of which it consists, and then to consider it when these parts are united.

#### SECTION I.

##### OF THE PARTS OF THE PELVIS SEPARATELY.

THE *Ossa Innominata* are two large expanded bones, which form the sides and fore-parts of the pelvis, and inferior lateral parts of the abdomen. In infancy and childhood, each of these bones is divided into three distinct parts by intermediate cartilages; and though afterwards the bones become united, and every appearance of former separation is nearly obliterated, the  
names

names by which they were distinguished in younger years are still retained.

1. The *Os Ilium*, or Haunch-bone, is the superior and largest portion of the innominatum. It extends from the semicircular ridge at the superior part, downwards and backwards as far as a transverse section of two-fifths of the *acetabulum* or cavity which receives the round head of the thigh-bone, and forwards to a little below the projection or ridge which forms the brim of the pelvis. Hence a small portion of the *ilium*, only, belongs to the pelvis, the expanded part being placed entirely without the brim. The different parts of the *ilium* are, the superior semicircular ridge or spine, giving rise to several inequalities or prominences, termed *spinal processes*; two broad surfaces, improperly named *dorsum* and *costa*; the small irregular surface by which it is joined to the sacrum posteriorly; the lower, thick, narrow part at the acetabulum; and the ridge or projection at the inferior anterior part.

2. The *Os Ischium*, or Seat-bone, call-

ed also Huckle-bone, is the inferior lateral portion of the os innominatum. Its figure is very irregular, and its extent may be marked by a line drawn nearly through the middle of the acetabulum.

The several parts of this bone are, the Body, Tuberosity, Ramus, and Spinous Process. The Body forms the lowest and greatest part of the acetabulum; the small branch, or Ramus, makes up four-fifths of the great hole common to this bone and the Pubes, called *foramen ovale* or *thyroides*; and the inferior bump, flattened by pressure, is the Tuberosity, on which the body rests in a sitting posture. The *tuber* is nearly cartilaginous at birth, and afterwards becomes an *epiphysis*. The Spinous Process is the sharp projection behind the tuberosity, to which the internal sacro-sciatic ligament is fixed.

3. The *Os Pubis*, or Share-bone, which makes the anterior middle part of the pelvis, is the smallest portion of the os innominatum.

Its several parts are, the Body, Angle, and Ramus. The Body is the superior  
outer

outer part, by which it is joined to the os ilium: on this is a remarkable crista, which forms part of the brim of the pelvis. The Angle runs downwads and forwards; and has a rough unequal surface, for the firm adhesion of the thick ligamentous cartilage that connects the bones of the pubes, which is considerably thicker and of a softer texture in females than in males. This articulation is called *symphyfis pubis*. The deficiency of bone below, or space between the two rami, is termed *arch of the pubes*.

The three portions of bone just now described, compose the os innominatum of each side; which are connected with the sacrum at the sacro-iliac synchondrosis, and anteriorly at the symphyfis pubis, by cartilaginous agglutinations. These are strengthened in a very particular manner by strong ligaments at the posterior symphyfis, and a double capsular aponeurosis anteriorly\*, which seem to render them incapable of se-

B 3                      paration,

\* See Dr Hunter's description of the Articulation of the Pubes, London Medical Observations and Inquiries, vol. ii. p. 333.

paration, or of any considerable relaxation by the impulse of labour. The bones and cartilages are, however, liable to be softened by disease, and the ligaments relaxed, *viz.* from ricketty disposition, rheumatism, and from debility in consequence of fevers and other disorders. The bones may also be fractured, or the articulations forced, by mechanical injury, as falls, bruises, &c. and suppurations may ensue from internal causes as well as accidents.

The posterior part of the pelvis is made up of the *Os Sacrum*, or Rump-bone, and its extremity the *Coccyx*.

The *Os Sacrum*, called also *Os Basilare* by the ancients, from its use in supporting the trunk, is, in young subjects, composed of five or six pieces, with intermediate cartilages. It has two surfaces, an external and internal: the former is rough and convex; the latter more smooth and concave, marked with several transverse lines, the remains of the intermediate cartilages which formerly connected the several pieces of bone. The flat side is bent, first downwards

wards and a little backwards, then considerably forwards. The *sacrum* is of a spongy cellular texture; and, in proportion to its size, the lightest bone of the body. Its figure is triangular, having the superior part for the base, with the apex downwards, gradually becoming narrower till it terminates in its appendage the *Coccyx*. The superior part, or base, anteriorly, has a sharp ridge, which makes the posterior part of the brim of the pelvis. Through the holes by which this bone is perforated, many nerves are transmitted. Those of the anterior superior part admit some of the largest of the whole system. The *sacrum* is articulated above to the last vertebra of the loins, in the same manner with the true vertebræ. Laterally, it is joined to the ossa innominata by a deep irregular surface, where it forms an immoveable articulation, called the sacro-iliac synchondrosis; and below, it is connected with the coccyx by means of strong ligaments. It is securely guarded from external injuries, by the thick muscles that cover it behind, and by the strong li-

gamentous membranes which closely adhere to it.

The *Os Coccygis*, which is placed at the extremity of the *sacrum*, forms the lower posterior part of the pelvis, and inferior terminating point of the spine. Its figure resembles an inverted pyramid. Like the *sacrum*, it is bent downwards and forwards; having an external convex, and internal concave, surface. It consists, generally, of three pieces of bones, with intermediate cartilages which admit of considerable motion of the bones, in a direction most commodiously adapted for the enlargement of the inferior capacity of the pelvis.

In children, the *coccyx* is almost wholly cartilage; towards the decline of life, the interposed cartilages begin to ossify; and at length the separate pieces are united, and become one bone with the *sacrum*. The immobility of the *coccyx* is not, however, the reason why women advanced in life have commonly difficult and laborious births: various reasons concur, as the dryness and rigidity

rigidity of those parts that are softer and more pliable in younger years, &c.

The parts common to the Pelvis are, the *Acetabulum Ossis Femoris*, *Foramen Ovale*, great *Sacro-sciatic Notch*, and the *Brim*.

In the recent subject, this cavity is lined with the *periosteum*, with cartilages, tendons, membranes, muscles, and cellular substance. Internally it is covered chiefly with the *iliacus internus*, the *psoas*, and the *obturatores muscles*; externally, by the *glutæi*, tricipital and pyramidal: the abdominal muscles, with the *peritonæum* and common integuments, defend it before; and the bottom is shut by the *musculi coccygæi*, the sacro-sciatic ligaments, the inferior part of the rectum, its sphincter, and the integuments of the *perinæum*. These parts are chiefly supplied with nerves by the anterior and posterior crural, the obturator, and those of the sacrum; with blood-vessels, by the iliacs.

The pelvis is articulated with the spine at the superior posterior part, and with the ossa femorum below. Its principal uses are, to defend the parts contained in it from  
external

external injury, to support the uterus during gestation, and to give passage to the child at birth. It also supports the trunk and inferior parts of the body, forming the intermediate connection between them; and is the great centre of motion of the whole machine.

## SECTION II.

### OF THE SHAPE AND DIMENSIONS OF THE PELVIS.

THE cavity of the pelvis, or space included within the bones, is of different shapes in different subjects; and has been supposed by different authors to approach more or less to an oval, elliptic, triangular, or circular form. Its circumference ought to be somewhat between an oval and a circle, and to measure nearly one-fourth of the height of the body.

The lesser or true pelvis may be distinguished by the *brim*, or superior aperture; and the *bottom*, outlet, or inferior aperture. Considered in this point of view, the diameters of its brim and bottom, the width, depth,

depth, and form of its cavity, must be carefully attended to.

At the brim, the largest diameter of the pelvis is lateral, the next to it diagonal, and the smallest from pubes to sacrum. A well formed pelvis, in the skeleton, ought to measure nearly five inches and one-fourth laterally; four inches and one-half, or four and three-fourths, diagonally; and four inches and one-fourth from the top of the pubes to that of the sacrum. These proportions are reversed at its inferior aperture, where the pelvis is nearly an inch wider from the lower part of the arch of the pubes to the point of the coccyx, when that bone is on the stretch, than it is from side to side: for the distance between the tuberosities of the ischia is about four inches, or four and one-fourth only; and from the arch of the pubes to the extremity of the coccyx when stretched out, five inches, or five and one-fourth.

The pelvis at the sides is nearly twice as deep as at the fore-part, and almost three times deeper behind; viz. from the top of  
the

the sacrum to the point of the coccyx, when extended, six inches, four at the sides, and two only at the pubes. The upper and lateral parts of the pelvis, at the brim, are nearly perpendicular: but the anterior part is shallow; and the lateral openings in the recent subject are covered with membranous, muscular, and ligamentous parts, which yield with the coccyx to the pressure of the child's head, and form a concave nearly equal to that of the sacrum. From this construction, added to the curve and concavity of the sacrum, and mobility of the coccyx, the bottom is considerably more capacious, and somewhat more circular than the brim.

A line from the symphysis of the pubes, to the junction of the two last vertebræ of the sacrum, is horizontal. And a line that bisects this horizontal line as well as the two diameters of the brim, makes the axis of the pelvis; and, if produced, will pass through the umbilicus in an erect posture; but, if in a reclining posture, the line that passes through the umbilicus will be at right angles  
to

to the diameter of the brim : and, in general, whatever is said of the angle which the axis makes with the diameter, is to be understood of the diameter of the brim, when the woman is erect ; and of the horizontal line, when reclined. But, towards the end of pregnancy, a line to pass through the centre of the pelvis must fall half-way between the navel and scrobiculus cordis.

The axis of the different parts of the pelvis, formed by a diagonal, show the curved line of direction which the child's head describes in passing ; and if these axes are supposed to be prolonged, they give the *déplacement* of the child's body.

THE female pelvis differs from the male chiefly in the following particulars: The angle which the vertebræ lumborum make with the sacrum is more obtuse, the ilia are more expanded, the concavity of the sacrum and coccyx is larger, the connection of the coccyx with the sacrum is looser, the tuberosities of the ischia are placed at a greater distance, the symphysis of the pubes is thicker, the arch of the pubes and the  
lateral

lateral openings are more considerable, and the pelvis is wider in all its dimensions.

### SECTION III.

#### DISTORTED PELVIS.

THE figure and proportions of the pelvis vary in some degree in different women ; for the depth and form may be so affected by different degrees of distortion, as not only greatly to diminish its cavity, and occasion less or more difficulty and danger in delivery, but in some instances to such a degree as to render the birth of a living child altogether impossible. As the proportions above described constitute what is called a *standard pelvis*, if it comes short of these dimensions, the pelvis becomes faulty or diseased.

There are different kinds, as well as degrees, of narrow pelvices. Sometimes the cavity of the pelvis is constitutionally small, without any deformity. Sometimes there is a narrowness confined to the brim ; sometimes

times to the inferior aperture. Sometimes the distortion is general over all the pelvis: And sometimes the capacity is retrenched by an intrusion of the vertebræ lumborum over the sacrum; which may be so considerable, as to reduce the diameter of the brim to the space only of two or three inches, or even less: and this is the species of distortion most frequently observed in practice. The vertebræ of the sacrum may be also, from pressure while in a morbid state, so deformed and protruded, as to render that bone quite straight, and from the same cause convex instead of concave.

The causes of narrow pelvices are chiefly ricketty affections in infancy, sometimes external violence, such as fractures and dislocation of the bones, &c. The bones also become softened by disease in the adult state; and are then liable to narrowness and distortion, even in women who have formerly had easy labours\*; but such cases are rare.

It

\* See Vol. V. of the London Medical Observations and Inquiries, case of Cæs. Op. by Dr Cooper.

It is often impossible without examination to discover a narrow pelvis, especially if the narrowness be confined to the brim. We may suspect the distortion from the make and shape of the woman. The direction in which the spine is distorted frequently determines it. But the pelvis is not always affected by a morbid curvature of the spine : if that extend, however, to the lumbar vertebræ, the pelvis very seldom escapes ; though the most certain and infallible diagnostic is the distortion of the inferior extremities along with a twisted spine. Women who are well proportioned in the lower extremities, have generally good pelvices. When these are ill proportioned or crooked, especially the thigh bones, along with other suspicious appearances, the pelvis is very generally, though not universally, deformed.

We can generally, by the touch, discover any species of distortion in the pelvis, below the brim, from the tuberosities of the ischia approaching too near each other, from the convexity of the sacrum, from  
the

the difference of shape in the arch of the  
pubes, &c.

When the deformity is at, or above, the brim, and the woman otherwise well shaped, it is often impossible to ascertain the narrowness till the labour be considerably advanced, and the child's head presenting in a conical form, with the bones protruding over one another, which are pretty certain marks of a narrow pelvis, or of a very large head.

But in order to understand the dimensions of the pelvis, it will be proper to consider the structure and form of the head of the foetus; which, being compounded of different pieces, is admirably well adapted for accommodating itself to the shape and diameter of the pelvis.

The head presents, in every point of view in which it can be looked at, a figure more nearly approaching to an oval form than to any other. The cranium is composed of a greater number of bones than in the adult. The pieces forming its base are strongly joined together ; but the frontal, the tempo-

ral, the parietal, and the occipital bones, instead of being indented into each other, as they afterwards are by what are termed futures, are loosely connected by means of membranes. This mechanism allows the cranium to be diminished by pressure, the bones being thereby made to approach or slide over each other.

Where the sagittal and coronal futures \* cross, there is a greater deficiency of ossification than in the course of these futures, as if the angles of the adjoining bones were rounded off. This membranous space is of a quadrangular form, and is called the anterior fontanelle.

There is nearly a similar structure where the sagittal and lambdoidal futures meet, but the membranous space is less, and is of a triangular shape. It is from this point the hairs diverge. It is termed the vertex, or the posterior fontanelle.

The

\* The term *future* is employed, because the membranes connecting the bones follow the same course that the futures afterwards do.

The face, like the cranium, is of an oval form, but its surface is unequal, and all the bones which compose it, except the lower jaw, are immoveable.

The head is broader behind than before, and the face is broader above than below.

The head, like the pelvis, has different diameters. The following are deemed the ordinary dimensions at birth :

From the os frontis to the occiput, between 4 and  $4\frac{1}{2}$  inches.

Laterally, from temple to temple, 3 inches.

Laterally, at the posterior part,  $3\frac{1}{2}$  inches.

From the top of the head to the nape of the neck,  $3\frac{6}{10}$  inches.

The length of the face from the chin to the forehead, is about  $5\frac{1}{4}$  inches.

The length of the whole head from chin to vertex, about  $5\frac{1}{2}$  inches ; and when the vertex is stretched out in laborious births, about 6 or 7 inches.

The total circumference of the head, between 12 and 14 inches, or somewhat more.

The breadth of the body at the shoulders, is about 5 or 6 inches.

The breadth of the body at the breech, about 5 inches.

The circumference of the body at shoulders and breech, from 15 to 18 inches.

The length of the whole body, 20 or 21 inches.

Considering the structure, form, and diameters of the pelvis and child's head, the application, in explaining the mechanical descent of the head through the pelvis, is sufficiently obvious ; but as the bulk and diameter of the one is not always mathematically adapted to the capacity of the other, difficulties must sometimes arise. Hence the advantage of this peculiar structure and mechanism of the *cranium* ; for if the child's head were one firm ossified body, whose dimensions at any time exceeded those of the cylindrical cavity through which it should pass, however mechanically, and with whatever force it descended, the delivery could not be accomplished without extraordinary assistance ;  
and

and the consequences would always prove fatal either to mother or child.

SECTION IV.

GENERAL OBSERVATIONS.

I. FROM the structure of the bony zone, called the pelvis, and from the articulation of its several pieces, it is very obvious that, during labour, the bones do not separate so as to enlarge the capacity of the cavity which they form, except in consequence of disease, or from violence.

2. The shape and construction of the child's head, which admits of considerable diminution by pressure, sufficiently compensate for the want of motion of the bones of the pelvis : for the head is of an oval or spheroidal figure, and is capable, as already stated, of being diminished by the force of labour. But as in different subjects it varies in shape, structure, and solidity ; it cannot, in passing through the capacity of the pelvis, be always made to suffer that diminution of its bulk, from pressure, which

may be necessary. If, therefore, the volume of the child's head be disproportioned to the diameters of the brim or outlet of the pelvis, or if the long axis of the one be applied in an improper direction to the other, obstacles to its passage must arise.

3. It is therefore of the utmost consequence to know the figure, structure, mode of position of the child's head, and the shape and proportions of the different openings of the pelvis; and to remember, that these proportions are reversed in the ovals of the superior and inferior apertures; that the depth of the posterior part is to the anterior as three to one, and to the sides as three to two.

4. These proportions are, however, liable to considerable variation in different subjects; and the whole pelvis may become so affected, as to have its brim, depth, and inferior aperture, considerably retrenched and diminished, from original mal-conformation, from bruises, and from disease.

5. Those women who appear, from some distortions, to have been subject to rickets,

rickets, have probably a contracted pelvis ; and the probability is greatly strengthened if the lower extremities have suffered.

6. Deformities of the spine from other causes do not generally influence the pelvis ; so that every woman apparently crooked, has not always a laborious and difficult birth.

7. All the different distortions of the pelvis may be accounted for from the pressure of the body on the bones previously softened by disease, *viz.* by the pressure of the upper parts of the spine upon the sacrum, and by that of the whole body on the ischia and pubes.

## CHAP. II.

## SEXUAL ORGANS OF WOMEN.

THE organs of generation are divided into *external* and *internal*.

The external parts are, the *labia externa*, the *clitoris*, the *nymphæ*, and the *os externum*. A membranous expansion, called *hymen*, and certain small fleshy excrescences, named *carunculæ myrtiformes*, may be styled the barriers between the external and internal parts.

The internal parts are, the *vagina*; the *uterus*, with the ligaments, ovaria, and Fallopian tubes.

The contiguous parts are, externally, the *mons veneris*, the *meatus urinaris*, the *anus*, *sphincter ani*, and *perinæum*; internally, the *bladder*, *urethra*, and *rectum*.

The *mons veneris* is nothing more than the skin raised by a quantity of adipose substance collected under it, that cushions it up externally in the form of a tumor. From  
the

the lower part of this the *labia* begin, and run downwards, till they are bounded by the perinæum, forming by their junction their inferior commissure. In their structure they are cellular, but more ligamentous than the mons veneris. Their inner surface is villous and glandular, separating a sebaceous kind of liquor analogous to that about the corona glandis of the male.

Upon separating the labia, a red projecting body appears, called *clitoris*, composed of two crura, which arise from the lower part of the ossa pubis, approach one another, and form the body of the clitoris, whose extremity is termed *glans*, covered with a loose doubling of the skin, called *præputium*.

The *nymphæ* are placed immediately within the external labia, and are continued downwards and forwards on the interior symphysis pubis nearly as far as the orifice of the urethra. They are productions or folds of the internal surface of the labia, and are very vascular. When the labia are  
open,

open, they divaricate; and when shut, come into contact.

Downwards from between the nymphæ runs a smooth *fossa*; at the bottom of this is a prominence, in the centre of which is the *orifice* of the *urethra*. Its usual situation is nearly opposite to the inferior extremities of the nymphæ.

Below the urethra is the aperture into the vagina, called *os externum*; round its orifice a membrane, or the remains of a membrane, called *hymen*, may be observed; and within that, there are two or three small bodies like excrescences, the *caruncule myrtiformes*, which were formerly regarded by anatomists as the consequences of the hymen being ruptured.

The *sphincter*<sup>v</sup> *vaginæ* is a flat muscle, coming down from the clitoris, and is lost on the perinæum. In very muscular subjects, its fibres run quite round the vagina. There is a plexus of nerves and blood vessels, called *plexus reteformis*, that goes up on the inside of this muscle, and communicates with the clitoris.

The

The *glands* of these parts are situated in such a manner, that, upon pressure, a considerable quantity of viscous humour is thrown out.

These parts, in proportion to their sensibility, are exceedingly irritable, and subject to considerable inflammation and tumefaction even in the easiest labours. Hence the impropriety and hazard of *officious touching* in the beginning of labours, while the presenting part of the child is at a distance, while the passage is narrow and tight, and not yet sufficiently relaxed by the lubricating mucus, which is afterwards so plentifully thrown out for the purpose.

The orifices of these parts, observing the direction of the sacrum and perinæum, do not run straight out, but downwards and forwards; by which the vagina, uterus, and rectum, are in less danger of protrusion. In the introduction of the catheter, the point should therefore be directed, first a little downwards and backwards, then gently raised forwards and upwards.

The *vagina*, or passage to the womb, lies  
immediately

immediately under the bladder, and upon the rectum. In virgins it is full of rugæ; but in married women, and especially in those who have born children, it is smooth, or nearly so. It is composed of a plexus of muscular fibres, and a rugous membrane; and its structure is also nervous and glandular.

The junction between the vagina and uterus is such as to form an angle between them, for the vagina is attached to the uterus higher behind than before. The vagina is more firmly connected with the bladder than with the rectum.

The *uterus* lies in the middle of the pelvis, loosely, between the rectum and bladder; but its position is liable to variation at different periods of life, and is affected by various other circumstances. It is triangular, of the figure of a pear or small powder-flask, and generally about three inches long, somewhat convex on its posterior surface, and flattened on its anterior one.

It is divided into three parts, viz. the fundus, the body, and the cervix. The latter terminates by the *os uteri*, or *os tincæ*,  
which

which projects into the vagina. On being cut open, it appears of a compact solid substance, thicker at its upper part, and thinner at the neck. Its cavity is very inconsiderable in the unimpregnated state, for the sides of the plane almost come in contact. Though its structure is muscular, its muscular fibres can with difficulty be traced: They appear to be mostly circular; but are very difficult to unravel. Its vessels proceed from the spermatics and hypogastrics, which furnish blood to all the parts. The arteries are very small in proportion to the veins both external and internal. Its nerves come from very small filaments; and are chiefly furnished from the intercostals, those of the sacrum, and the sympathetici maximi. It is also supplied with lymphatic vessels.

The uterine *ligaments* are of two kinds; the *ligamenta lata*, and the *ligamenta rotunda*. The former are no more than part of the peritonæum; which, after giving a coat to the uterus, goes out laterally to form these ligaments: they are therefore only doub-

doublings of that membrane, like the mesentery to the intestine, serving to connect the uterus to the sides of the pelvis. They have two folds in their upper part : The anterior contains the Fallopian tubes ; the posterior, the ovaria.

Each of the ligamenta rotunda is a little plexus of muscular fibres, nerves, and vessels, enveloped in a common membrane, in the form of a cord or ligament, coming down before the Fallopian tubes, and going out at the rings of the abdominal muscles to be lost in the groin.

In the superior plica of the broad ligaments, the *Tubæ Fallopianæ* are contained. They have one extremity fixed to the fundus uteri, where the perforation is so small as hardly to admit of a hog's bristle ; but the diameter gradually enlarges, becoming wider and wider, like a trumpet, till it terminates in a small opening surrounded by a fringed substance, forming the other extremity, and floating loosely in the pelvis, called *Morsus Diaboli*. This cavity is not straight, but convoluted : When inflated, it seems to be  
strung

strung upon the broad ligament, as the intestines are upon the mesentery.

The *ovaria* are two flattened oblong bodies, nearly of the shape of nutmegs, situated at the sides of the uterus, on the posterior part of the ligamenta lata. Their shape and size are different in different women: Their outer surface is divided by a number of chops; but is smoother and more uniform in virgins than in married women who have had children. There is little to be observed in their texture, except a number of vessels, and something like vesiculæ or water bags; these were supposed to be the ova, remarkable in the ovaria of some animals. When a woman dies with child, one particular cavity is observed, which was thought to be the calyx from whence the ovum had dropped; but this is too obscure a subject to be noticed in this place.

The *anus* is the orifice of the rectum, which is the centre of the axis of the pelvis. It is contracted into rugæ by a plexus of muscular fibres, called *sphincter ani*, which answers nearly the same purpose as it does in  
the

the male, and is lost in the perinæum, instead of the bulb of the urethra.

The *rectum* runs in a line, not quite straight behind the vagina and uterus, in the hollow part of the sacrum, through the cavity of the pelvis, and is supported upon the coccyx and muscles below, as in the male.

The *urethra* is about an inch and a half long; has no regular prostate, like the male; but is supplied with a number of small glandular bodies, placed along the whole interior surface; and between the orificium vaginæ, and the meatus urinarius, a pretty large glandular body is placed, which has been termed the *female prostate*.

The *bladder* is situated over the vagina and uterus immediately behind the pubes; and is supposed to be larger and more capacious than in the other sex.

As the vagina and urethra lie between the rectum and bladder, any disorders in the one are readily communicated to the other.

The *perinæum* is the septum or space between the orificium vaginæ and the anus.

It is chiefly made up of the sphincter ani and the muscular substance surrounding the vagina, the common integuments, and cellular substance. In its natural state it does not much exceed an inch in breadth, but is considerably stretched in time of labour.

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CHAP.

## C H A P. III.

## OF THE MENSES.

AT the age of puberty, when a considerable change in the constitution of women has taken place, a discharge of a bloody-like fluid, from the sexual organs, begins to occur periodically. This evacuation has been termed Menfes, Catamenia, &c. Its source certainly is the uterus, from which it does not flow in a stream, but gently drips for three or four days, in some women for a shorter time, and in others for a longer period. The quantity commonly evacuated is between four and six ounces.

The menfes, in temperate climates, continue in healthy women to occur at a certain term, generally every three or four weeks), till between the 40th and 50th year, except during the time of pregnancy, when the discharge is always suppressed. During nursing, too, the catamenia seldom appear.

The

The quantity, duration, and periods of the discharge, vary in different women, and seem to be influenced by peculiarity of constitution, by the manner of living, and by climate.

The cause of this periodical evacuation, peculiar to the female of the human species, has been a curious and perplexing subject of inquiry in all ages.

In the infancy of medicine, when fancy more than judgment influenced the theory, it is not surprising that the most chimerical reasons should have been given, to account for an appearance so striking and so important. Thus it was attributed to the influence of the moon from its periodical appearance; to a ferment in the fluids, when fermentation was introduced to account for every phenomenon. Men, in other views respectable, have exerted all their ingenuity in defence of these theories; but they are now exploded, and the catamenia are commonly supposed to arise from an universal plethora, or a topical congestion: these opinions, we shall proceed to examine.

From a superficial view of the several

phenomena, it would appear probable that the menfes are occafioned by plethora. But this idea of itfelf is vague, and will not account for all the appearances. By plethora we underftand a larger quantity of blood than is adapted to the capacity of the veffels, either of the whole fyftem, or of any particular part. This may depend on the increafe of the abfolute quantity of the fluids; or on a conftriktion of the veffels. It is the former of thefe that feems to be meant by the advocates for a general plethora; and the chief arguments appear to be derived from the general debility and inactivity, and the fwelling of the breafte. The two former, though often depending on plethora, may be produced by many other caufes; fo that no argument can be drawn from them. The laft by no means fhows an increafed quantity of the fluids in general; it feems much connected with the ftate of the uterus, and takes place in ftates of the fyftem very difadvantageous to a general fulnefs. We may, with fome confidence, therefore, reject an opinion that has many direct arguments

ments againſt it. For many of the ſymptoms are not to be explained upon the principle of general plethora.

That the Menfes depend upon a Topical Congeſtion is the opinion of the late Dr CULLEN.

The following account of Dr CULLEN's Theory was inſerted in the former editions of this work, by permiſſion of the Doctor himſelf.

He obſerves, “ That the growth of the body depends upon the increaſe of the quantity of fluids giving occaſion to the diſtention of the veſſels, and thus producing the gradual evolution and full-growth of the whole ſyſtem. This evolution does not happen equally in every part of the body at the ſame time, but ſucceſſively according to the different ſize and denſity of the ſeveral veſſels determined by the original ſtamina. Thus the upper parts of the body firſt acquire their natural ſize, and then the lower extremities. By the ſame conſtitution it ſeems to be determined that the uterus of the human ſpecies ſhould not be con-

considerably evolved, till the rest of the body is nearly arrived at its full bulk. But as the vessels of every part, by their distention and growth, increase in density, and give thereby more resistance to their further growth, at the same time, by the same resistance, they determine the blood in greater quantity into the parts not yet equally evolved. By this means the whole of the system must be successively evolved, till every part is brought to that degree of distention which is necessary to bring them to a balance in respect of density and resistance with one another. Upon these principles, there will be a period in the growth of the body, when the vessels of the uterus will be distended till they are in balance with the rest of the system; and their constitution may be such, that their distention may proceed so far as to open their extremities, terminating in the cavity of the uterus, so as to pour out blood there; or it may happen that a certain degree of distention may be sufficient to irritate and increase the action of the vessels, and thereby to produce an hæmorrhagic effort,

fort, which may force the extremities of the vessels with the same effect of pouring out blood.

“ In either way, he accounts for the first appearance of a flow of blood from the uterus in women. In order to this, he does not suppose any more of a general plethora in the system, than what is constantly necessary to the successive evolution of the several parts of it; and he proceeds upon the supposition, that the evolution of each particular part must especially depend upon the plethora, or increased congestion, in its proper vessels. Thus he supposes it to happen with respect to the uterus; but as its plethoric state, he observes, produces an evacuation of blood from its vessels, this evacuation must empty these vessels more especially, and put them again into a relaxed state with respect to the rest of the system. This emptied and relaxed state of the vessels of the uterus will give occasion to a new congestion of blood in them, till they are again brought to that degree of distention that may either force their extremities,

or produce a new hæmorrhagic effort, that may have the same effect. Thus an evacuation of blood from the uterus, being once begun by the causes before mentioned, it must, by the operation of the same causes, return after a certain period, and must continue to do so till particular circumstances occasion a considerable change in the constitution of the uterus. What determines the periods of these returns to be nearly in the space of a month, he cannot exactly explain; but supposes it to depend upon a certain balance between the vessels of the uterus and those of the other parts of the body. This must determine the first periods; and when it does so, it can be understood, that a considerable increase or diminution of the quantity of blood in the whole system will have but little effect in increasing or diminishing the quantity distributed to the uterus. It may also be further observed, that when the evacuation has been repeated for some time at regular periods, it may be supposed that the *power of habit*, which so readily takes place in the  
animal

animal system, may have a great share in determining the periodical motions of the uterus to be with great regularity, though in the mean time considerable changes may have happened with respect to the whole system."

This theory, however, is still liable to so many objections that another opinion has been lately introduced to notice, viz. that the menstrual discharge is a secretion from the uterus.

The chief arguments in favour of this doctrine are founded on the structure of the uterus, and the appearance and qualities of the evacuated fluid, which are totally different from those of blood.

The purposes which the catamenia serve have not yet been satisfactorily explained.

## CHAP. IV.

OF THE CHANGES PRODUCED ON THE  
UTERUS BY IMPREGNATION.

THE œconomy of the gravid uterus affords some of the most interesting views of the operations of nature, which can offer themselves to a physiologist, although the subject be still much involved in obscurity.

Respecting that great operation, by which the continuation of the species of animals is accomplished, little satisfactory can be said; and, therefore, in this work, a very short sketch only of the conjectures that have been held out as explanations of this mysterious process is required.

The labours of many eminent anatomists have elucidated the contents of the impregnated womb, the next subject in order, and have also fully illustrated the changes produced by impregnation on the uterus itself.

itself: But many circumstances relating to the functions of the several parts of the ovum yet remain to be explained; a task which cannot be undertaken in a work such as this.

## SECTION I.

## OF CONCEPTION.

IT is obvious that the child must be formed out of materials furnished either by one of the parents or by both: hence three theories of generation have been proposed, viz.

I. That the rudiments of the fœtus are derived from the female parent.

II. That they originate from the male; and,

III. That they result from something furnished by both.

That each of these systems has had its several supporters and antagonists, cannot be surprising, when we consider the obscurity of the subject, as well as the extent of  
learning

learning and brilliancy of imagination which have distinguished the several combatants.

We shall not consider minutely these several systems in this place. To elude difficulties, which they cannot conquer, modern philosophers have endeavoured to transfer the question; and by supposing the animal already to exist complete in its several parts, but of an astonishing minuteness, have rather laboured to show by what means it is animated, and by what assistance evolved.

This view, when extended to successive generations, at first startles the modest inquirer by its apparent absurdity, and perplexes the moderate calculator. It, however, is not more contradictory than many physiological positions which have never been controverted; and it is some addition to its credit, that it is supported by BONNET and HALLER. On this foundation, which is supported also by the authority of HARVEY, the principle of animation is alledged to be the semen masculinum; and BONNET has adduced many plausible arguments

guments to prove, that, for some time, the nourishment of the foetus is chiefly derived from the same source; which affords, at least, a simple view of the subject.—The embryo, when first the object of our senses, appears almost entirely vegetative: it adheres to the fundus uteri, and extracts the fluids of its mother without any exertions that are peculiarly its own. But it soon shows some marks of animation. Its heart is observed to beat: it seems to prepare fluids for its own purposes, and to separate those which are no longer beneficial: in short, it acquires a distinct system; from part of which it is supplied with the original portion of its fluids; and which it, in its turn, supplies with the same fluids more highly elaborated, and more carefully prepared.

The second theory is now almost universally abandoned, although perhaps it is not more false than the former.

The last opinion has, within these few years, become very prevalent; and, upon the whole, the arguments in its favour seem more numerous and plausible than those

those offered in support of the other theories.

## SECTION II.

### STRUCTURE OF THE OVUM IN EARLY GESTATION.

THE ovum, soon after its introduction, adheres to some part of the internal surface of the uterus : at first it appears like a small vesicle, slightly attached, and gradually increases in bulk, till it apparently comes in contact with the whole cavity of the fundus.

The embryo, or unformed foetus, with placenta, umbilical cord, membranes, and waters, in early gestation, constitute the ovum : which then appears like a thickened fleshy mass, the more external lamellæ and other parts, which are afterwards separate and distinct, being blended and jumbled in such a manner that they cannot be readily distinguished or traced.

In the progress of gestation, the external lamella, or membranous surface, stretching, grows thinner ; the cavity which  
contains

contains the rudiments of the foetus becomes more apparent ; and then a thick vascular part on the outside of the chorion, called *placenta*, can be readily distinguished from the membranous portion of the ovum.

The membranous part of the ovum (or bag which contains in its cavity the embryo, funis, and watery fluid in which the embryo floats) is originally composed of two coats ; the internal lamella, or that next the foetus, is called *amnios* ; and the external, the *true chorion*. But the lamella, which constitutes the external covering of the ovum, is supposed to be derived immediately from the uterus. This production is at first loosely spread over the ovum, and afterwards comes in contact with the true chorion. This lamella, which forms the external vascular surface of the ovum, is much thicker than the true chorion and amnios ; and the proportion which it bears to the other parts is so great, that, in early conception, the mass of the ovum is chiefly composed of it. Dr Ruyfch  
called

called this exterior coat the *tunica filamentosa*; more modern authors, the *false* or *spongy chorion*; and by Dr Hunter the *membrana decidua* or *caduca*. He alleged that this consists of two distinct layers; one of which lines the uterus, the other covers the ovum; and this he called *decidua reflexa*, because he supposed it to be reflected from the uterus upon the ovum, forming the connecting medium between them. The portion which covers the ovum, he described as being nearly a complete membrane, like the true chorion and amnios: but that which immediately lines the uterus is, he said, imperfect or deficient, being perforated with three foramina, *viz.* two small ones, corresponding with the insertion of the tubes at the fundus uteri; and a larger ragged perforation opposite to the orificium uteri\*.

Thus, according to Dr Hunter, the embryo, in the early time of gestation, is inclosed in four membranes, *viz.* the  
spongy

\* See Dr Hunter's Tables, Pl. xxxiv. fig. 5. & 6.

spongy chorion, called *decidua*, the *decidua reflexa* (eventually blended together); the true chorion and the amnios.

The true chorion and the amnios are decidedly organized membranes, being composed of regular layers of fibres. The decidua, and decidua reflexa, differ in appearance, and seem to resemble those inorganic substances which connect inflamed viscera. If they be original membranes, and only visible from their evolution and increase, it is not easy to conceive how the ovum gets behind them, since the Fallopian tubes are not covered by them. We are therefore inclined to adopt an opinion suggested first by Mr Falconer and Mr Cruikshanks, and rendered probable by the experiments of Signor Scarpa, "That they are entirely composed of an inspissated coagulable lymph."

Between the amnion and chorion a quantity of gelatinous fluid is contained in the early months; and a small bag, or white speck, is then observed on the amnion, near the insertion of the umbilical

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cord.

cord. It is filled with a white liquor, of a thick milky consistence; and is called *vesicula umbilicalis*, *vesicula alba* or *lacteæ*: it communicates with the umbilical cord by a small funis, which is made up of an artery and vein. This vesicle, and duct or tube leading from it, are only conspicuous in the early months; and afterwards become transparent, and of consequence invisible\*. Their use is not yet understood.

Though the bag, or external parts of the conception, at first form a large proportion of the ovum in comparison of the embryo or foetus, in advanced gestation the proportions are reversed. An ovum between the eighth and ninth week after conception, is nearly about the size of a hen's egg, while the embryo scarcely exceeds the weight of a scruple; at three months, the former increases beyond the magnitude of a goose's egg, the weight about eight ounces; but the foetus does not then amount to three ounces: at eight months, the foetus

\* See Dr Hunter's elegant plates of the Gravid Uterus, Pl. xxxiv. fig. 2.

tus generally weighs somewhat more than five pounds, the secundines little more than one pound: at birth, the foetus weighs from six or seven to nine pounds, which it rarely exceeds\*; but the placenta seldom increases much in bulk from between the seventh and eighth month.

Having described the ovum in early gestation, we shall next take a view of the germ; trace the progress of the embryo and foetus; then resume the subject of the ovum, to explain the structure of the membranes, placenta, &c. in advanced gestation, and point out the most remarkable changes which the uterus suffers during impregnation.

## SECTION III.

## EVOLUTION OF THE FOETUS.

THERE can be little doubt that all the parts of an animal exist completely in the

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germ,

\* *Natura sibi semper constans manet, consuetum maturorum foetuum pondus esse inter 6 et 7 libras civiles medium; rarius 9 libras excedere.*—Henr. Aug. Wrisbergii *Obs. Anatomicæ, &c.* Goettingæ, 1779.

germ, though their extreme minuteness and fluidity for some time conceal them from our sight. In a state of progression, some of them are much earlier conspicuous than others.

The embryo, in its original state, is probably entirely fibrous and nervous; and these primary parts seem to contain, in a small scale, all the others which are afterwards to be progressively evolved. Of the former the heart and liver, of the latter the brain and spinal medulla, first become conspicuous; for the spine of the embryo is formed some time before any vestige of extremities begin to sprout. The encephalon, or head, and its appendages, first appear; then the thoracic viscera; next the abdominal: at length the extremities gradually shoot out; the superior first, then the inferior; and, by slow and insensible gradation, the beautiful and admirable structure of the whole complicated system is evolved.

As soon as the embryo has acquired sufficient consistence to be the subject of our observation, a little moving point, which  
is

is the heart, discovers itself. Nothing, however, but general circumstances relating to the particular order and progress of the successive germination or evolution of the viscera, extremities, vascular system, and other parts of the human fœtus, can be ascertained, as it is beyond the power of anatomical investigation.

It is also exceedingly difficult to determine the age or proportional growth of the fœtus. The judgment we form must be liable to considerable variation: 1st, From the uncertainty of fixing the period of pregnancy; 2dly, From the difference of a fœtus of the same age in different women, and in the same woman in different pregnancies; and, lastly, Because the fœtus is often retained *in utero* for some time after the extinction of its life.

The progress of the fœtus appears to be slower in the early than latter months: but the proportional increase is attended with difficulty in the calculation; for this, among other reasons, that we have not an opportunity of knowing the magnitude

or weight of the same foetus in different months. It will also, probably, be materially influenced by the health, constitution, and mode of life, of the parent.

A foetus of four weeks, is near the size of a common fly ; it is soft, mucilaginous, seems to hang by its belly, and its bowels are only covered by a transparent membrane. At six weeks, the consistence is still gelatinous, the size about that of a small bee, the head larger than the rest of the body, and the extremities then begin to shoot out. At twelve weeks, it is near 3 inches long, and its formation pretty distinct \*. At four months, the foetus measures above 5 inches ; at five months, between 6 and 7 inches ; at six months, the foetus is perfect in all its external parts, and commonly in length about 8, or between 8 and 9 inches ; at seven months, it is between 11 and 12 inches ; at eight months, about 14 or 15 inches ; and at full time,  
from

\* See Dr Hunter's elegant Plates of the Gravid Uterus, the Works of Dr Harvey, De Graaf, Malpighi, Haller, &c.

from 18 to 22 or 23 inches. But these calculations, for the above reasons, must be very uncertain.

## SECTION IV.

## CONTENTS OF THE GRAVID UTERUS IN ADVANCED GESTATION.

THESE consist of the Fœtus, Umbilical Cord, Placenta, Membranes, and Contained Fluid. We have already traced the progress of the fœtus; and shall proceed to describe the other parts of the ovum in advanced gestation, as just enumerated.

## UMBILICAL CORD.

THE fœtus is connected to the placenta by the umbilical cord, or navel-string; which may be defined, “ a long vascular rope, composed of two arteries and a vein, covered with coats derived from the membranes, and distended with a quantity of viscid gelatinous substance, to which the bulk of the cord is chiefly owing.

The cord always arises from the centre of the child's belly, but its point of insertion in the cake is variable. Its shape is seldom quite cylindrical; and its vessels are sometimes twisted or coiled, sometimes formed into longitudinal sulci. Its diameter is commonly about the thickness of an ordinary finger, and its length sufficient to admit the birth of the child with safety, though the placenta should adhere at the fundus uteri. In length and thickness, however, it is liable to considerable variation. The extremity next the foetus is generally strongest; it is somewhat weaker and more slender next the placenta, according to its place of insertion; which, though commonly not far from the centre, is sometimes towards the very edge. This suggests an important advice to practitioners, to be cautious of pulling the rope to extract the placenta when they feel the sensation of its splitting as it were into two divisions, which will proportionally weaken its resistance, and render it liable to be ruptured with a very slight degree

degree of force in pulling.—The use of the cord is to connect the foetus to the cake.

### PLACENTA.

THE Placenta, Cake, or After-birth, is a thick, soft, vascular mass, connected to the foetus by the funis umbilicalis, and to the uterus by means of the spongy chorion, as already explained. It differs in shape and size; it is thickest at the centre, and gradually becomes thinner towards the edges, where the membranes go off all round, making a complete bag or *evolucrum* to surround the waters, funis, and child.

Its substance is chiefly vascular, and probably in some degree glandular. The ramifications of the vessels are very minute, which are unravelled by maceration, and, when injected, exhibit a most beautiful appearance resembling the bushy tops of a tree. It has an external convex, and an internal concave, surface. The former is divided into a number of small lobes and fissures, by means of which its adhesion to the uterus is more firmly secured. This lobulated appearance

appearance is most remarkable when the cake has been rashly separated from the uterus ; for the membrana decidua, or connecting membrane between it and the uterus, is then torn.

The internal concave surface of the placenta is loosely covered with the amnion, and by the chorion more immediately and intimately. From this internal surface arise innumerable ramifications of veins and arteries, which inosculate and anastomose with one another ; and at last the different branches unite, and form the *funis umbilicalis*.

The after-birth is found to adhere occasionally to every part of the internal surface of the uterus ; and sometimes, though more rarely, part of the cake extends over the *orificium uteri* ; from whence, when the orifice begins to dilate, the most frightful and dangerous floodings arise. But the most common place of attachment of the cake is from the superior part of the cervix to the fundus.

Twins,

Twins, triplets, &c. have their placenta sometimes separate and sometimes adhering together. When the placentæ adhere, they have generally the chorion in common; but each foetus has its distinct amnion. They are commonly joined together, either by an intervening membrane, or by the surfaces being contiguous to one another; and sometimes the vessels of the one cake anastomose with those of the other\*.

The human placenta, according to Dr Hunter, is similar in structure to that of quadrupeds; and seems to be composed of two distinct systems of parts, a spongy or cellular, and a vascular substance. It has of consequence two distinct sets of vessels. The spongy or cellular part, formed by the decidua, is derived from the mother; and, if filled with injection, will increase the placenta to nearly twice its ordinary thickness; the more internal vascular part belongs entirely to the foetus, and can only be injected from the cord, as the spongy part by filling the vessels of the uterus. This will

\* Two preparations of this kind are in my possession.

will be better understood when the mode of circulation between the parent and child is explained.

#### MEMBRANES.

THESE consist, externally, of two layers of the spongy chorion, called *decidua*; internally of the true chorion and the amnion. They form a pretty strong bag, commencing at the edge of the cake, going round the whole circumference, and lining the internal surface of the womb. When separated from the uterus, this membranous bag is slender and yielding, and its texture readily destroyed by the impulse of the contained fluid, the pressure of the child, or of the finger in touching; but in its natural state, while it lines the womb, and is in close contact with its surface, the membranous bag is so tough and strong as to give a considerable degree of resistance. It is also strengthened in proportion to the different layers of which it is composed, whose structure we shall proceed to explain more particularly.

I. The

1. The *Membrana Decidua*, or that lamella of the spongy false chorion which is in immediate contact with the uterus, is originally very thick and spongy, and exceedingly vascular, particularly where it approaches the placenta. At first it is loosely, as it were, spread over the ovum; and the intervening space is filled with a quantity of gelatinous substance. It gradually becomes more and more attenuated, and approaches nearer to the interior lamella of the decidua, called *decidua reflexa*; and about the fifth month the two layers come in contact, and adhere so as to become apparently one membrane\*.

2. *Decidua Reflexa*. In its structure and appearance it is similar to the former, being rough, fleecy, and vascular, on its external surface; internally, smoother, and perforated with a number of small foramina, which are the orifices of vessels that open into this internal surface. In advanced

\* *Vid.* Dr Hunter's Tables, Pl. xxvii. fig. 2. Pl. xxix. fig. 1. 2. 4. 5. Pl. xxxi. fig. 1. 2. &c.

ced gestation, it adheres intimately to the former membrane, and is with difficulty separated when the double decidua comes off entire; but the outer lamella more commonly adheres to the uterus after the placenta and other membranes are expelled, and is afterwards cast off with the cleanings.

The *double decidua* is opaque in comparison of the other membranes: the blood-vessels are derived from the uterus, and can be readily traced into it. Dr Hunter supposed that the double decidua lines the uterus nearly in the same manner as the peritonæum does the cavity of the abdomen, and that the ovum is inclosed within its duplicature as within a double nightcap. On this supposition the ovum must be placed on the outside of this membrane, which is not very readily to be comprehended, unless we adopt Signor Scarpa's opinion already mentioned, and suppose it to be originally entirely composed of "an inspissated coagulable lymph."

3. The *True Chorion*, or that connected with the amnion, is the firmest, smoothest, and most transparent of all the membranes, except the amnios; and, when separated from it, has a considerable degree of transparency. It adheres pretty closely to the internal surface of the cake, which it covers immediately under the amnios, and gives also a coat to the umbilical cord. It is connected to the amnion by means of a gelatinous substance, and is easily separated from it.

4. The *Amnion*, or internal membrane, forms the external coat of the umbilical cord. This internal lamella of the membranous bag is by much the most thin, attenuated, and transparent of the whole; no vessels have ever been discovered in it in the human subject. It is, however, firmer and stronger than the chorion, and gives the greatest resistance in the breaking of the membranes.

The small bag, called *vesicula umbilicalis*, formerly described, and only conspicuous in the early months from its situation, is placed between the amnion and chorion,  
near

near the attachment of the cord; and, from the colour of its contents, has been mistaken for the urachus: but there is no allantois in the human subject.

The *allantois* in quadrupeds is an oblong membranous sac, or pouch, placed between the chorion and amnion. This membrane communicates with the urachus, which in brutes is open, and transmits the urine from the bladder to the allantois.

5. The *Waters* are contained within the amnion, and are called the *liquor amnii*. They are purest, clearest, and most limpid in the first months; acquiring a colour, and becoming somewhat ropy, towards the latter end. They vary in different subjects, both in regard to consistence and quantity; and, after a certain period, they proportionally diminish as the woman advances in her pregnancy. This liquor does not, in any respect, resemble the white of an egg; it is saltish, and appears in every respect an excrementitious fluid.

Water is sometimes collected between the chorion and amnion, or between the  
lamellæ

lamellæ of the chorion. This is called the *false water*: It is generally in much smaller quantity than the true water; and, without detriment to the woman, may be discharged at any time of pregnancy.

## SECTION V.

## CHANGES ON THE UTERINE SYSTEM FROM IMPREGNATION.

THOUGH the uterus gradually increases in size from the moment of conception till full time, and although its distention is proportioned to that of the ovum, with regard to its contents, it is, strictly speaking, never completely distended: for in early gestation, they are entirely confined to the fundus; and, at full time, the finger can be passed for some way within the orificium uteri without touching any part of the membranes\*. Again, though the capacity of the uterus increases, yet it is not mechanically stretched, for the thickness of its

F fides

\* See Dr Hunter's Tables, Pl. xxxi. fig. 1.

fides does not diminish. The increased size seems, therefore, to depend on a proportional quantity of fluids sent to that part, just as the skin, in the progress of a child's growth, does not become thinner, but preserves its usual thickness.

This is proved from several instances of extra-uterine foetuses, where the uterus, though there were no contents, was enlarged in size, from the additional quantity of fluids transmitted, as if the ovum had been contained within its cavity. Boehmerus\* relates the same circumstance, without attempting to explain it, in the history of a case of extra-uterine conception in the fifth month. The uterus is painted of a considerable size, though the foetus was contained in the ovarium.

The gravid uterus is of different sizes in different women, varying according to the bulk of the foetus and involucra. The situation also varies according to the  
increase

\* Boehmeri Obs. Anatom. Rarior. Fasciculus notabil. circa uterum human. Observatio de Conceptione ovaria, tabula prima.

increase of its contents, and the position of the body. For the first two or three months, the fundus is nearly as before impregnation; but as the uterus stretches, it gradually acquires a more rounded form. In general, the uterus never rises directly upwards, but inclines a little obliquely; most commonly to the right side\*: its position is never, however, so oblique as to prove the sole cause either of preventing or retarding delivery.

Though considerable changes are occasioned by the gradual distention of the uterus, it is difficult to judge of pregnancy from appearances in the early months. For the first three months, the os tincæ feels smooth and even, and its orifice is nearly as small as in the unimpregnated state. When any difference can be perceived, it consists in the increased length of the projecting tubercle of the uterus, and the shortening of the vagina from the descent of the fundus uteri through the pelvis. This change

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in

\* See Dr Hunter's Tables, Pl. i. iii. and iv.

in the position of the uterus, by which the projecting tubercle appears to be lengthened, and the vagina proportionally shortened, chiefly happens from the third to the fifth month. From this period the cervix begins to stretch and to be distended, first at the upper part; and then the os tincæ begins also to suffer considerable changes in its figure and appearance. The tubercle shortens, and the orifice expands; but during the whole term of gestation, the mouth of the uterus is strongly sealed up with a ropy mucus, which lines it and the cervix, and begins to be discharged on the approach of labour. In the last weeks, when the cervix uteri is completely distended, the uterine orifice begins to form an elliptical tube, instead of a fissure; and sometimes, especially when the parietes of the abdomen are relaxed by repeated pregnancy, disappears entirely, and is without the reach of the finger in touching. Hence the os uteri is not placed in the direction of the axis of the womb, as has generally been supposed.

The

The progressive increase of the abdominal tumor, from the increasing size of the uterus, affords a more decisive mark of the existence and period of pregnancy than any others; and the progress is nearly as follows.

About the fourth, or between the fourth and fifth month, the fundus uteri begins to rise above the pubes or brim of the pelvis, and the cervix to be somewhat distended. In the fifth month, the belly swells like a ball with the skin tense, the fundus extends about half way between pubes and navel, and the neck is sensibly shortened. In the seventh month, the fundus, or superior part of the uterine tumor, advances as far as the umbilicus; and the cervix is then nearly three fourths distended. In the eighth, it reaches midway between the navel and scrobiculus cordis; and, in the ninth, to the scrobiculus itself, the neck then being entirely distended; which, with the os tincæ, become the weakest parts of the uterus. Thus at full time the uterus occupies all the umbilical and hypogastric regions; its

shape is almost pyriform, that is, more rounded above than below, and having a stricture on that part which is surrounded by the brim of the pelvis\*.

During the progress of distention, the substance of the uterus becomes much looser, of a softer texture, and more vascular than before conception; and the diameter of its veins is so much enlarged that they have acquired the name of *sinuses*. They observe a more direct course than the arteries, which run in a serpentine manner through its whole substance, and anastomose with one another, particularly at that part where the placenta is attached: it is in this part also that the vascular structure is most conspicuous.

The arteries pass from the uterus through the decidua, and open into the substance of the placenta in an oblique direction. The veins also open into the placenta; and by injecting these veins from the uterus with

\* See Dr Hunter's Tables, Pl. xvi.

with wax, the whole spongy or maternal part of the placenta will be filled\*.

The muscular structure of the gravid uterus is extremely difficult to be traced with any exactness. In the wombs of women who die in labour, or soon after delivery, fibres running in various directions are observable more or less circular.

These seem to arise from three distinct origins, *viz.* from the place where the placenta adheres, and from the aperture or orifice of each of the tubes: but it is almost impossible to demonstrate regular plans of fibres continued any length without interruption.

The appendages of the uterus suffer also considerable changes; for the tubes and ovaries gradually go off below the fundus as it stretches, and the broad ligaments at full time are almost entirely obliterated. At full time, especially in a first pregnancy, when the womb rises higher than in subsequent impregnations, the ligamenta ro-

F 4

tunda

\* See Dr Hunter's Tables, Pl. x. fig. 1. and 2.; Pl. xv. fig. 1. &c.

tunda are considerably stretched; and to this cause those pains are probably owing which strike from the belly downwards in the direction of these vascular ropes, and are often very painful and distressing towards the latter end of gestation. Again, as the uterus, which is chiefly enlarged towards the fundus, at full time stretches into the cavity of the abdomen without any support, leaving the broad ligaments below the most bulky part, we can readily see, that by pulling at the umbilical cord to deliver the placenta, before the uterus is sufficiently contracted, the fundus may be pulled down through the mouth of the womb, even though no great violence be employed. This is styled the *inversion of the uterus*; and is a very dreadful, and generally fatal, accident. It is the consequence only of ignorance or temerity; and can scarcely happen but from violence, or from an officious intrusion on the work of nature, by pulling at the rope while the woman is faint or languid, and the uterus in a state of atony.

In

In some rare instances, the force of labour, which propels the child where the cord is short naturally, or rendered so by circumvolutions round the body of the child, may, when the placenta adheres to the fundis uteri, bring it down so near the os tincæ, that little force would afterwards be sufficient to complete the inversion. This suggests a precaution, that in the above circumstances, if strong labour-pains should continue, or a constant bearing down ensue, after the delivery of the child, the practice of pulling by the cord should be carefully avoided, and the hand of the operator be prudently conducted within the uterus, to separate the adhesion of the cake, and guard against the hazard of inversion\*.

The ovaria also suffer some changes from pregnancy.

A

\* OF seven unhappy cases of inverted uterus where I have been called within several years, the consequence of ignorance or temerity of the practitioner, in one single instance only the woman survived the shocking accident. The other women had generally expired before any attempt could be made to relieve them.

A roundish figure of a yellow colour appears in one of them, called by anatomists the *corpus luteum*; and in cases of twins, a corpus luteum often appears in each ovary.

If the ovary be injected in the latter months, the corpus luteum will appear to be composed chiefly of vessels. A portion of it, however, in the centre, will not be filled; from which it is, with some reason, suspected that it is a cavity, or that it contains a substance not yet organised \*.

## SECTION VI.

### MANNER OF CIRCULATION BETWEEN THE MOTHER AND FOETUS.

IT is obvious that the communication between the parent and child is carried on entirely by means of the placenta. No immediate communication of blood vessels has yet been clearly shown by the experiments of any anatomist; nor has any coloured injection

\* See Dr Hunter's Tables, Pl. v.; Pl. xv. fig. 5.; Pl. xxix. fig. 3.; and Pl. xxxi. fig. 3.

injection been pushed from the uterus into the interior vascular part of the cake, nor from the fœtus or umbilical vessels into the cellular part, except in consequence of extravasation. The cellular part of the placenta, derived from the decidua, is not a spongy inorganic substance, merely intended for the attachment of the cake; but probably a regularly constructed and organised part belonging to the mother. The cells, therefore, cannot be filled by injection from the umbilical vessels, though an injection will readily pass from the vessels of the uterus.

We find a similar structure obtain in cows, where the cellular can be easily separated from the vascular part, and the distinct property of each ascertained.

As the structure of the cellular part of the placenta is somewhat similar to that of the more simple glands, it may be reasonably inferred, that it is intended for other purposes besides merely receiving the mother's blood, and permitting its stagnation.

It

It seems that an operation similar to secretion is carried on in the placenta.

This mode of circulation is admirably well contrived for the preservation of the child from diseases which would otherwise be communicated from the mother. If the mutual communications were kept up by continuous vessels, the fœtus would constantly be in danger of suffering when the mother's circulation was accelerated or otherwise disturbed.

## SECTION VII.

### CIRCULATION IN THE FOETUS.

THE blood of the fœtus from the aorta is conveyed along the arteries of the umbilical cord, (and these are continuations of the internal iliacs, which are larger than the external, and pass up on each side of the urinary bladder) to the placenta.

Through every part of the placental mass, the blood thus conveyed is distributed by the arteries ramifying in the most minute

minute manner, as already mentioned, and then it is collected into venous branches, which uniting form the umbilical vein. This vessel reconducting the blood, runs along the funis into the abdomen, where it enters under the liver. In that viscus it divides at nearly half a right angle into two branches, by one of which, called the *ductus venosus*, a part of the blood is transmitted immediately to the lower vena cava.

By the other branch the rest is carried to the vena portarum, from whence it is circulated through the liver, and then is sent also into the cava.

All the blood now in the cava is said to be carried into the right auricle of the heart, and from thence, it is commonly alleged by physiologists, a part at once passes into the left auricle through a small oval hole (the *foramen ovale*) placed in the partition between the auricles. An opinion rendered plausible, from there being a valve so situated as to admit the passage of fluids from the right to the left, and not from the left to the right auricle.

Of

Of the remainder of the blood, (that which passes into the right ventricle), not above one half is circulated through the lungs, for a part is conveyed to the aorta by a canal leading to it from the pulmonary artery, termed *canalis arteriosus*, which, like the *canalis venosus*, is peculiar to the foetus.

Thus the characteristic distinction between the circulation of blood in the foetus and that in the natus consists in this, that in the latter the whole mass is circulated through the lungs; whereas in the former, no more blood is conveyed to them than seems necessary for their nutrition.

### SECTION VIII.

#### POSITION OF THE FOETUS IN UTERO.

THE foetus is commodiously adapted to the cavity of the uterus, and describes an oblong or oval figure; its several parts being collected together in such a manner as to occupy the least possible space. The  
spine

spine is rounded, the head reclines forward towards the knees, which are drawn up to the belly, while the heels are drawn backwards towards the breech, and the hands and arms are folded round the knees and legs. The head of the child is generally downwards. This does not proceed, as was commonly alleged, from the funis not being exactly in the middle of the child's body, for it is not suspended by the funis : the reason is, because the superior parts are much larger and heavier in proportion than the inferior. When other parts present, it seems owing to the motion of the child altering its figure when the waters are much diminished in quantity, or to circumvolutions of the cord ; when the position is once altered, it becomes confined or locked in the uterus, and cannot easily resume its original posture.

As the figure of the fœtus is oval, and the head naturally falls to the most depending part of the uterus, the vertex generally points to the os tinæ, with the ears diagonally in the pelvis between the pubes and sacrum.

facrum. The foetus is mechanically disposed to assume this position from its peculiar figure and construction, particularly by the bulk of the head and articulation with the neck, by the action of its muscles, and by the shape and construction of the cavity in which it is contained.

## SECTION IX.

### PECULIARITIES OF THE FOETUS.

THE foetus, both in external figure and internal structure, differs materially, in many striking circumstances, from the adult. It is sufficient for our present purpose to mention a few particulars.

The head is very large in proportion to the rest of the body ; the cranial bones are soft and yielding, and the sutures not yet formed ; so that the bulk of the head may be diminished in every direction, and its passage consequently be rendered more commodious. The bones of the trunk and extremities, and all the articulations, are also remarkably

remarkably flexible. All the apophyses are epiphyses; even the heads and condyles and brims of cavities, instead of bone, are of a soft cartilaginous consistence.

The brain, spinal marrow, and whole glandular as well as nervous and sanguiferous systems, are considerably larger in proportion in the fœtus than in the adult. The *Thymus* gland is of a very remarkable size. The liver and kidneys are much larger in proportion; and the latter are divided into a number of small lobes, as in the brute.

The fœtus also differs in several circumstances from a child who has breathed.

The cavity of the thorax is less in proportion than after respiration. The lungs are smaller, more compact, of a red colour like the liver, and sink in water; but putrefaction, and a particular emphysema, as in diseases of cattle, and blowing into them, make them swim. This circumstance ought to prevent us from hastily determining, by this criterion, whether a child

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has

has breathed or not. Neither does their sinking prove that the child never breathed; for a child may die, or be strangled in the birth, or immediately after, before the lungs are fully inflated.

The arterial and venous systems are also different from that of the child. Hence the difference in the manner of circulation already taken notice of.

#### SECTION X.

##### SUBJECTS CONNECTED WITH THE PRECEDING.

#### I. SUPER-FOETATION.

SOON after impregnation takes place, the cervix and orificium uteri become entirely closed up by means of a thick viscid gluten: the internal cavity is also lined by the external membrane of the ovum, which attaches itself to the whole internal surface of the fundus uteri: the Fallopian tubes also become flaccid; and are, as gestation advances, so altered in situation, that they cannot reach the ovaria to receive or convey

convey another ovum into the uterus. For these, and other reasons, the doctrine of super-fœtation, or the possibility of one conception supervening soon after another in the same woman, is now pretty generally exploded. This doctrine seems to have arisen from the case of a double or triple conception; where, some time after their formation and progressive evolution *in utero*, one fœtus has been expelled, and another has remained; or, after the extinction of life at an early period, one or more may still be retained, and thrown off in a small and putrid state, after the birth of a full grown child.

The uterus of brutes is divided into different cells; and their ova do not attach themselves to the uterus so early as in the human subject, but are supposed to receive their nourishment for some time by absorption. Hence the os uteri does not close immediately after conception; for a bitch will admit a variety of dogs while she is in season, and will bring forth puppies of these different species.—Thus it is common for

a gre-hound to have, in the same litter, one of the gre-hound kind; a pointer; and a third, or more, different from both. This is another circumstance that has given rise to the idea that super-fœtation sometimes takes place in the human subject, but it can only happen when there is a double set of parts; instances of which are very rare.

## II. EXTRA-UTERINE FOETUSES, or VENTRAL CONCEPTION.

The impregnated ovum, or rudiments of the fœtus, is not always received from the ovarium by the Fallopian tube, to be thence conveyed into the cavity of the uterus. For there are instances where the fœtus sometimes remains in the ovarium, and sometimes even in the tube; or where it drops out of the ovarium, misses the tube, falls into the cavity of the abdomen, adheres to the neighbouring parts, and is thereby nourished.

In some of these cases the contents burst into the cavity of the abdomen, in others they are discharged through openings formed

ed

ed by abscesses; and, in others, the foetus becoming shrivelled and covered with a kind of calcareous matter, remains for many years in the body without occasioning any uneasiness\*.

### III. MONSTERS.

EVERY considerable deviation in the structure of a foetus from the common order of nature is considered as monstrous, whether such deviation be consistent with life or not; and the production is commonly termed a *monster*. This definition of a monster comprehends all the varieties that have been observed; and these we shall endeavour to reduce under four general heads.

1. Those productions which have supernumerary parts. These include all the variety, from the famous instance of the Bohemian sisters who were joined together by

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the

\* Vide Memoires de l'Acad. de Sciences; Philosophical Transactions; Manget. Biblioth. Anat.; Med. Essays; and Smellie's Cases.

the glutæi muscles and the intestinal canal, to those fœtuses which have only an additional finger or toe.

2. Those whose parts are defective; which has happened with respect to every part of the animal body.

3. Those who have any remarkable distribution of any of the vessels, nerves, or excretory organs, whether externally visible or not.

4. The productions of animals of different species, exemplified in the mule produced by the mixed generation of an ass and a mare.

It is very difficult to give an explanation of these deviations, nor indeed is it to be expected, while the process of generation itself is so great a mystery. If we allow with BONNET, &c. that a germ or embryo of the future production exists in the female previous to the impregnation, many of these deviations must to it be referred. Though this, however, removes the difficulty, it by no means solves it. Super-  
numerary

numerary parts, it has been thought, might be more readily accounted for; for if two ova become contiguous in their gelatinous state, they may easily unite; and this contiguity and union will prevent the evolution of many of the parts, and the production will appear as one. This, it is alleged, has been often the case, as in the Bohemian sisters mentioned under the first species; and the union in the different monsters has at various times been seen gradually more and more complete: so that most supernumerary parts proceed from this cause is an idea supported by very plausible arguments.

It may, however, be doubted whether two ova, in their gelatinous state, can become contiguous, as in cases of twins, triplets, &c. each foetus is included in a distinct membranous bag.—But this subject is too obscure to be minutely considered in this work.

## PART II.

### PATHOLOGY.

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#### CHAP. I.

#### DISEASES PECULIAR TO WOMEN IN THE UNIMPREGNATED STATE.

**A**LL the diseases to which women, in the unimpregnated state, are peculiarly liable, are found to depend on one or more of the three following circumstances: viz. derangement of structure in the sexual organs, irregularities of the catamenia, and the sympathy between the uterus and other parts.

Although the complaints arising from these sources very properly engage lecturers on midwifery in a pretty ample detail; it is necessary, in this work, only to notice those diseases which claim the principal attention

tention from their being common or from their being dangerous.

## SECTION I.

## TOPICAL DISEASES OF THE SEXUAL ORGANS.

THE *mons veneris* and *labia* are liable both to œdematous and inflammatory swellings, and to tumors, chiefly of the steatomatous kind. The latter sometimes, from a small beginning, gradually enlarge to an enormous size: but as they commonly adhere by a small peduncle, their excision is a simple operation, and is seldom followed by hæmorrhage that cannot be easily stopt; they leave but slight marks behind them, and for the most part heal readily.

Oedematous swellings are of two kinds; general, or local. The first are the attendants of an universal leucophlegmasia, the consequence of a dropfical habit, and the treatment must then be conducted on general principles, with a view to correct the  
fault

fault in the habit. The latter arise from venous plethora, and the pressure of the bulky uterus interrupting the returning blood from the lower extremities; hence the serous part is extravasated, and forms a local œdema. The swelling at first appears on the feet and legs, and gradually extends to the thighs and labia. But as this complaint is chiefly symptomatic of pregnancy, we cannot, with propriety, consider it in this section.

The *labia*, when inflamed or abraded, from whatever cause (as from the involuntary discharge of acrid urine, or any other acrimonious discharge which exco-riates the parts), may grow together if not prevented by frequent bathing: should this happen, they must be separated with a scalpel, and the like accident in future prevented by proper care.

The *clitoris* sometimes becomes enlarged greatly beyond the ordinary size. When incommodiouly elongated, amputation may be performed with safety. The enlargement  
ment

ment of the *nymphæ* also requires the same treatment.

Extirpation of the *carunculæ myrtiformes* can never be necessary: but *fungous excrescences* of these parts may generally be removed by caustic, or any more gentle escharotic application.

The *urethra*, too, is subject to disorders and accidents: such as fungous excrescences, contusion, laceration, inflammation, gangrene, &c.

The first of these may, when large, be cut out with scissars, or destroyed by the application of the bougie. All the others, as now enumerated, may be the consequence of a stone sticking in the passage. When the expulsion cannot be forwarded by the semicupium, the stone must be extracted, either by dilating the urethra itself, or cutting upon it through the vagina. The symptoms of a stone in the female bladder, towards its neck, or in the urethra, are nearly similar to those which occur in the male; and the treatment and  
operation

operation are too well known to require a description.

The *hymen* being imperforated in some subjects, the os externum is entirely shut up, and the membrane is expanded even to the meatus urinarius. It is seldom attended with inconvenience till the age of puberty, when the menses should appear. About that time a swelling or tumor is formed by the confinement of the accumulating menstrual fluid. The quantity increases at every succeeding period; and, by the distention of the parts, excites the most troublesome and painful complaints. The cure consists in dividing the membrane by incision. The opening should be sufficiently large, that the whole contents may be freely evacuated: In some cases the thickness is so great, as to require the use of a trocar\*. The re-union of the lips of the wound must, by proper dressings, be carefully guarded against.

Narrowness of the vagina sometimes  
occurs

\* See Edinburgh Med. Commentaries, Vol. II. part 2. Sect. ii. Case iv.

occurs. This may be either natural, from original conformation; or accidental, in consequence of disease. Cicatrices may be formed from a laceration after severe labour, in consequence of ulceration, erosion, &c. Preternatural constrictions may likewise be induced, from the use of styptic applications, or fumigations. The cure may be attempted by emollient fomentations; as by the steams of warm water directed to the parts; and by introducing a small tent of compressed sponge, which had been previously moistened and kept tight bound with tape till dry. This, by imbibing the moisture, will swell and expand; and thus the aperture will be gradually stretched. The tent must be withdrawn every day, by means of a thread fixed through its middle, and a larger one introduced in its stead. The sponge should be smooth, and lubricated with pomatum. This process must be continued till the passage becomes sufficiently enlarged.

If these methods fail, recourse must then  
be

be had to the knife : though, in the simple contraction of the cavity of the vagina, this expedient is seldom necessary, and the attempt is often attended with the utmost danger ; therefore it should never be determined on till every other method has failed. The dilatation, which had previous to impregnation seemed impracticable, has very often been accomplished by labour-pains.

Sometimes there is a natural defect in the genital parts, from an original mal-conformation ; so that the vagina is either imperforated altogether, or there remains only a foramen sufficient to transmit the menstrual blood. If, from coalition of the parietes of the vagina, the passage be entirely shut up, any attempt to force it would be vain. The orifice in the latter case will afford a proper direction for the knife ; but the operator must be cautious not to mistake the urethra for the passage into the vagina.

When the vagina is impervious altogether,

ther, the uterus has been sometimes found wanting\*.

The *perinæum*, from the distention it suffers in time of labour, or from mechanical violence in delivery, is subject to inflammation, tumefaction, laceration, and their consequences; and these injuries, in some cases, are not confined to the *perinæum* only, but even extend to the vagina, rectum, and bladder. If these complaints resist the common means of relief, such as frequent bathing, fomentations, cataplasms, &c. and terminate in gangrene, leaving behind them fistulous sores with callous lips, unless a cure be effected by time, they generally continue in a fistulous state, without a possibility of remedy.

THE *uterus*, like other parts, may also be affected with various disorders: These are chiefly inflammation and its consequences; sarcomatous, fungous, and polypous tumors;

\* Vid. Morgagni, de causis et sedibus morborum, Epistol. XLVI.

mors; stony concretions, tympanites, schirrhous and cancerous tumors, &c.

When the *os tincae* is shut up, either originally, or by cicatrix in consequence of supperation, laceration, ulceration, or the like, the case is generally incurable; except the menstrual blood by its weight force a passage, or point out the manner of procuring it: if that fails, future sterility is the unavoidable consequence.

Original conformations of this kind seldom admit of any treatment; for this reason, because, besides the imperviousness of the *os tincae*, the uterus itself sometimes appears to be a solid body without any cavity in the centre.

Sarcomatous, Fungous, or Polypous Tumors, arise from all parts of the vagina and uterus. They happen to women at every period of life, but most frequently towards the decline. They generally proceed from an obstruction of the small glands of the parts; and are less or more difficult to discover or remove, as their origin is low or high in the vagina or uterus,

rus. Their texture or consistence is very different; sometimes they are tender and mucilaginous, like those in the nose; at other times firm and solid, like a wen. Their existence is discovered by a careful inquiry into the circumstances of the case, and by an examination of the parts; sometimes their basis is very considerable; though they generally adhere by a small neck. They sometimes, like schirri, continue indolent for many years. In their mildest state, they are attended with perpetual stillicidium from the vagina, and sometimes with profuse and dangerous floodings. They must be carefully distinguished from *herniæ*, *prolapsus uteri*, and other tumors. Polypi, when curable by an operation, may generally be removed by ligature; a safer method than cutting with the scalpel, as they are often supplied with large blood vessels, from which there may be danger of a fatal hæmorrhagy; and it may be added, that they are commonly beyond the reach of the knife.

For fixing the ligature, the fingers of the operator sometimes may be sufficient. When

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this method fails, Dr HUNTER's needle, or M. LEVRET's double canula for applying and fixing the ligature over the tumor, are the most simple and successful expedients. M. LEVRET's instrument is nothing more than a piece of flexible gold or silver wire, passed in the form of a noose, through a double canula: This is to be conveyed into the vagina, and carried over the tumor till it reach the base; the ends of the wire must be gently drawn, or it must be twisted round as tight as the patient can easily bear; the canula must afterwards be fixed to the thigh, and the wire tightened every day as it slackens. By this means the circulation in the tumor is stopped, and in two or three days the polypus will drop off. In fixing the ligature, the operator must be cautious not to mistake the tubercle of the os tincæ for the polypous tumor; a blunder which would prove of fatal consequence to the patient.

STONY CONCRETIONS, and even WORMS, it is said, have been sometimes found

found within the uterus\*. Calculous concretions have indeed been discovered almost in every cavity of the human body; but such appearances rarely occur in the human uterus †. The existence of worms is not very probable.

TYMPANITES UTERI, mentioned by nosologists, is a disease which does not exist; but sometimes air is accumulated in the vagina, and is passed involuntarily, frequently with considerable noise. The only cure for this uncommon disorder depends upon removing the discharge which may give rise to it; for it is always connected with a morbid discharge from the vagina.

SCHIRROUS TUMORS are seldom discovered till the disease has made considerable progress. An uneasy weight and bearing down, suppression of urine, fluor albus, uterine pain, and sometimes flooding, are the usual symptoms; but the touch of the

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enlarged

\* *Vide.* Miscellanea Curiosa. Acad. Naturae.—Mem. de l'Acad. Royal des Scienc. Vol. II. &c.

† A very extraordinary case of that kind was published in 1800 by Dr McKay of Huntingdon.

enlarged indurated cervix or fundus uteri, in suspicious cases, afford the most infallible criterion. These tumors, like similar complaints in other parts, though they may long remain in an indolent state, seldom admit of relief from medicine, and generally at length degenerate into cancer. Nor is any good to be expected from Peruvian bark, sarsaparilla, or even the so-much extolled cicuta. The general health must then, in a very particular manner, be attended to, and the most urgent symptoms must be palliated. For this purpose, a cooling regimen, the moderate use of gentle laxatives, occasional bleedings, and opiates, are the chief means.

A foetid bloody discharge, along with an increase of pain, heat, and itching, mark the ulcerated or cancerous state of the disease. The progress is then rapid; and the stench becomes intolerable even to the attendants as well as to the patient. The ravages of the disease are shocking; for stools, urine, blood, and matter, are sometimes discharged from one orifice. In these  
unhappy

unhappy circumstances, little can be attempted by way of treatment, but to amuse the patient, by palliating the painful symptoms with opiates, and keeping the fores clean by injections, till death brings the only relief.

PROCIDENTIA or PROLAPSUS UTERI, is a change of place in the uterus, so that it falls down into the vagina, sometimes protruding through the os externum. The cause may either be general debility, or topical relaxation of the connecting parts, particularly of the vagina. The cure consists in the reduction and retention of the prolapsed part. When pessaries are disagreeable, the uterus may be suspended by a bit of sponge: Gently restraining injections sometimes prove useful; but a long-continued use of them will as certainly be hurtful, so that they should always be employed with caution. The general constitution should be strengthened by a proper regimen, bark, mineral waters, and the cold bath.

The *ovaria*, in common with other glandular parts, are subject to disease, such as

schirrous, steatematous, and dropfical swellings; by which they become often so much enlarged as to occupy the whole abdomen. Such cases generally prove incurable. Tumors of the ovaria at length generally terminate in dropsy. The symptoms are analogous to those of the ascites; from which, however, they differ in several particulars.

In the beginning, the enlarged ovarium may be easily distinguished from ascites, by the swelling and pain being circumscribed, and confined to one side; in the progress, by the advances being more slow and gradual; in its advanced stages, by œdematous swellings of the leg and thigh on the side affected, and by our being able to feel it from the vagina. The treatment consists merely in palliating symptoms, as no means hitherto proposed can be expected to produce a cure. When the tumor points outwardly, the contents, whether water or pus, must be evacuated by a free opening; when gelatinous or purulent, a constant drain, by means of a seton, may, in some cases,

cases, be employed with advantage. The patient must afterwards be treated in the usual manner. The extirpation of the ovary, in a diseased state, has been by some authors proposed: but when the tumor is very much enlarged, and perhaps adhesions to the neighbouring parts are already formed, the excision would at least prove a difficult, if not a very hazardous operation.

*Bones, Hair, and Fat*, are sometimes found in the tubes or ovaria; but they seldom afford such symptoms as indicate the true nature of the disease, and therefore are commonly beyond the reach of human art.

## SECTION II.

### IRREGULARITIES OF THE MENSES.

THESE comprehend *Amœnorrhœa*, *Mœnorrhagia*, and *Leucorrhœa*; and each distinct genus includes a considerable variety of species.

I. AMÆNORRHOEA consists of two species.

1. The retention or absence of the menses beyond their usual period of appearance, called *emanfio menfium*.

2. An interruption in the periodical revolution, after the law of habit is established, styled *suppressions*, or *obstructions*.

1.] The *Retention of the Menses* proceeds from different causes; and may be referred to general debility of the system, which impairs the action of the heart and arteries; or to some fault in the uterus itself, as torpor or rigidity of the vessels. The first produces symptoms of debility, which are generally styled *chlorotic*: and the indications of cure are, to strengthen the stomach and system; which is chiefly affected by bark, chalybeates, regimen, and the cold bath. Torpor and rigidity of the uterine vessels may be sometimes removed by the means usually employed for removing torpor and rigidity of the whole system; or by promoting the action of the uterine vessels, more particularly by stimulating the neighbouring organs. This is chiefly to be attempted in those cases where Nature makes  
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an effort ; but from debility, or some other circumstance, is unable to accomplish it. She is then to be gently assisted, not forced. Aloetic purges, *tinctura melampodii*, small doses of calomel, or electricity, are the usual remedies ; but they ought to be cautiously and prudently used. *Tinctura fuliginis*, or an extract prepared from it, and given in the dose of a scruple twice or thrice a day, is a more safe, and often more efficacious medicine in the latter case, along with the foetid gums. But the warm bath, or a change of climate, are the most powerful antispasmodics, and may be often successfully employed when other remedies fail.

Though we are in general able to distinguish these two causes of debility and torpor, yet it must be allowed, that retention of the menses, from any cause, soon induces a debility, which, without some attention, may be mistaken for the original defect.

2.] *Suppression of the Menfes.* The evacuation may be deficient in periods or quantity. The first is more properly termed  
*suppression,*

*suppression*, or, in vulgar language, *obstructions*; the latter, *sparing* or *painful menstruation*.

*Suppression.* The menses are rarely suppressed in consequence of weakness; though it must be observed, that they are readily affected by any general disorder in the habit: and in that view, the deviation is to be considered merely as symptomatic; and the cure must depend on correcting the fault in the constitution.

Spasm, or rigidity of the uterine vessels, is, perhaps, a more frequent cause than any other, occasioned more remotely, by cold, irregular passions, plethora &c. The cure ought then to be directed with a view to remove the constriction of the uterine vessels, and at the same time adapted to particular constitutions and symptoms. Venæsection, the warm bath, and emmenagogues, suited to the peculiar circumstances of the case, are the proper remedies. Medicines under the name of *emmenagogues* are not, however, to be relied on; and the means employed for restoring the evacuation

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tion are most successfully exhibited when our efforts concur with those of nature. Violent emmenagogues, so far as they may have any tendency to affect the general health, are always improper, and frequently hurtful. In a simple suppression, it is often sufficient to keep the patient quiet; to avoid cold, and irregularities of diet; with the use of the warm bath, semicupium, or steams of warm water directed to the uterus, when the expected period approaches.

When the suppression is more obstinate, aloetic purges, electricity, and the most powerful relaxants and antispasmodics, must be employed.

*Dismænorrhœa, sparing, difficult, or painful Menstruation.* Some women menstruate with difficulty, the uterine efforts to throw out blood are painful and imperfect, the discharge is scanty; but the appearance continues for many days: during which the irritation is communicated from the uterus to the neighbouring parts, and, by sympathy, all over the system; very generally

rally producing pains about the articulation of the sacrum, from thence to the ilia, and down the thighs; and not unfrequently attended with sickness and reaching, nervous symptoms, or a slight degree of hysteria.

These symptoms are best relieved by avoiding cold and irregularities for several days preceding the accustomed period; by using actual warmth then, and more particularly during the time of menstruation; by drinking every night before bed-time, and in smaller quantities through the day, any mild, diluting, tepid drinks; by frequent rest on a bed or sofa; and, occasionally, by the use of opiates.

II. MÆNORRHAGIA.—The menses are only to be considered as excessive, when the periods recur so often, the duration is so long, or the quantity evacuated so great, as to induce debility, with its usual symptoms. In all these cases, Leucorrhœa is a frequent attendant. The causes may be active or passive, in common with other preternatural

ternatural hæmorrhagies. Of the former are, Plethora, universal or local; increased action of the vessels from fever; excessive exercise; passions of the mind; stimuli applied to the uterus, or neighbouring parts; and every cause which determines the blood more forcibly to the uterus. Of the latter, Relaxation, universal or local. To distinguish *active* from *passive* mænorrhagia, is of the utmost consequence in directing the treatment.

In the *first* case, which is generally preceded with headach, oppressed breathing, attended with heat, thirst, quick full pulse, and other febrile symptoms, we must be exceedingly cautious of giving a sudden check to the flow, till the vessels have been sufficiently emptied by the discharge, or by the prudent use of venæsection. A spare cooling diet, cool air, open belly, and the strictest antiphlogistic regimen, are then essentially necessary. Heat, violent agitations and exercise, and every corporeal and mental exertion, should be avoided.

In *passive* mænorrhagia, the discharge  
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must be moderated by styptics and opiates given internally; by cold wet applications to the pubes and external parts; by confinement to a horizontal posture on a firm bed, with hair matress, and few bedclothes; by giving cold astringent drinks; and by avoiding every cause of irritation.

The vis vitæ must be duly supported by nourishing diet; but while the flow continues, every thing of the stimulating kind under the name of *cordial* must be very cautiously used.

When the hæmorrhagy hath entirely ceased, the interval must be improved to use the proper means for restoring the constitution. Of these, strengthening diet, the moderate use of cordials, gentle exercise, the Peruvian bark and chalybeates, are principally to be relied on. In some passive cases, the flow is almost constant. Cordials and tonics are then particularly indicated; and gentle exercise in a carriage has been often known to moderate or suppress the flow.

Under

Under the article of *Mænorrbagia* may also be mentioned,

*Irregularities towards the cessation of the menses.*

The menses generally become irregular towards their final cessation. This critical period in the female constitution is commonly announced by irregular interruptions; unexpected returns, or immoderate discharges; in many instances, by excessive, long continued, or frequent and alarming floodings. The symptoms assume a variety of appearances, as influenced by constitution, habit, manner of life, and the state of the uterine system. They are rather to be considered as the consequence of a general change in the constitution, which terminates the age of child-bearing, than merely the effects of an accidental interruption, or excess of the periodical evacuation.

Every important change which the constitution suffers, is introduced by slow and insensible degrees: the alarming symptoms which at this period occur, proceed from the decline of life, strictly speaking, a diseased

eased state of the uterus, or mistaken management. In some women, the menses take their leave more abruptly; in others, more slowly; and no material inconvenience is perceived in either case. Women who never had children, those who never enjoyed good regular health, those whose constitution has been impaired by frequent labours or miscarriage, and those who are nervous and delicate, are more commonly the subjects of complaint towards this period.

The particular symptoms and constitution, the age of the patient, her manner of life, and other circumstances formerly mentioned, will direct the proper treatment.

If no obvious inconvenience arise from the absence of the Menses, it would surely be absurd to injure the constitution by a sudden change of manner of living, by abstemious diet and debilitating evacuations. On the contrary, if the symptoms indicate a full habit and plethoric diathesis,

sis, venæsection, purgatives, and spare diet, are obviously necessary.

Frequent or immoderate floodings, attended with symptoms of debility, must be treated as already directed. In relaxed weakly women, the consequences are always to be less or more dreaded: the flux must be checked by cold wet applications; the painful symptoms relieved by opiates; and the constitution afterwards strengthened by nutritious diet, bitters, &c.

Shooting pains about the region of the uterus, the pubes, and breasts, along with frequent floodings, or leucorrhœa, indicate suspicion of schirrous or cancerous disposition, and are generally preludes of disease, which either ends fatally, or renders the remains of life uncomfortable.

Floodings in the unimpregnated state, seemingly alarming and hazardous from their excess or frequency, are never to be dreaded, while no quantity of clots or concretions are voided, while they are unaccompanied with violent pain in the hypogastric region or other symptoms of mor-

bid predisposition. They may generally be moderated by some of the means formerly recommended in *mænorrhagia*; and if the strength be kept up, though the hæmorrhagy may occasionally recur at vague and irregular periods, even for two or three years, I have never, in the course of a long practice, known it to end fatally in a single instance: a complete recovery is generally at last accomplished, and the constitution restored, with the prospect of a state of good health for a considerable time after.

III. LEUCORRHOEA, *Fluor Albus*, or *Whites*.—Every discharge of a mucous or ferous nature from the vagina, is comprehended under this title; but one species only of the disease properly belongs to this head. To avoid repetitions, however, it is better to consider the different species at once.

1<sup>st</sup>, When the fluid discharged has a glairy appearance, somewhat like thin starch, it constitutes the mildest species of leucorrhœa, being attended with no pain, and  
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being productive of no bad effect whatever on the general health.

The discharge in this case proceeds from the mucous glands of the vagina, and is occasioned by any cause capable of increasing the secretion from these glands. Few women somewhat advanced in life are entirely free from it. Those who are inactive and sedentary, relaxed or weakly, and those who have had many children in rapid succession, or who have been subject to frequent abortion, or to irregularities of the menses, are particularly liable to this complaint.

The indications of cure are to remove any irritating cause, and to restore tone to the affected parts. The latter of these objects may be attained by the use of the cold bath and the injection of astringent fluids into the vagina.

2d, The discharge of a thick yellow or offensively fetid fluid, constitutes a disease of a very different nature. It is always attended with considerable irritation about the parts, and often resembles gonorrhœa.

It occurs in women of a gross corpulent or plethoric habit.

This discharge proceeds probably from the glands of the cervix uteri as well as those of the vagina. It is to be regarded as the result of an effort of nature to relieve the system from over-depletion.

The means of cure are blood-letting, the most cooling regimen, and the frequent use of purgatives. Astringent injections would prove highly injurious.

3d, The last species of the disease (that which properly speaking should alone have been considered under this head) consists of a thin serous-like discharge, attended with pain and weakness of the lumbar region, and symptoms of indigestion, and great general debility. The discharge is thought to proceed from the same source as the menses; an opinion which is founded on the observation, that at each periodical return the symptoms of indisposition are greatly aggravated, and the evacuation is in smaller quantity, and of a much paler colour.

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This species of leucorrhœa in many cases obstinately resists all remedies, rendering the patient not only exceedingly unhealthy, but also barren. The most rational indications of cure are to restore strength to the general system, and to remove the local disease of the uterus.

With the former view, Peruvian bark, the various preparations of steel, invigorating diet, regular exercise, &c. may be prescribed. And for the latter purpose bals. capiv. or bals. toltan, may be given internally, and the cold bath and astringent injections may be employed.

STERILITY. Many circumstances prove causes of barrenness; and of these a great number admit of no remedy.

Hence medical treatment can only avail in cases where sterility arises from irregularities of the catamenia, from universal or local debility, or from some obvious derangement in the structure of the parts, which can be repaired by a surgical operation.

## SECTION III.

## DISEASES SOMETIMES MISTAKEN FOR GESTATION.

VARIOUS diseases incident to the uterine system, and other morbid affections of the abdominal viscera, frequently excite the symptoms, and sometimes assume the appearance, of uterine gestation.\* Complaints arising from a simple obstruction are sometimes mistaken for those of breeding; and diseased tumors any where in the pelvis, or about the region of the uterus, so nearly, in some instances, resemble pregnancy in their symptoms, that the ignorant patient is often deceived.

In many of these cases, the menses disappear; nausea, reachings, and other symptoms of breeding, ensue. Flatus in the bowels is mistaken for the motion of the child; and in the advanced stages of the disease,

\* Vid. Morgagni de causis et fed. Morb. Ep. xlviii.

disease, from the pressure of the swelling on the adjacent parts, tumefaction and hardness of the mammæ supervene, and sometimes a viscid or serous fluid distils from the nipple. These circumstances strongly confirm the woman in her opinion, till time convinces her at last of her mistake.

FALSE CONCEPTION. MOLA. Sometimes after symptoms of pregnancy have for a considerable time taken place, substances of various appearances and structure are expelled from the uterus. Where these resemble an ovum, except in there being no traces of the embryo, they are termed false conceptions, and are in fact blighted ova. But when the substance is a solid fleshy-like mass it is styled *mola*. This is occasioned by some diseased action of the uterus little understood. It is not always the result of the sexual intercourse.

The same observation is applicable to another species of mole, viz. a mass of hydatids of different sizes, blended with a pa-

renchymatous substance. That this is sometimes the ovum, changed by disease, cannot be denied ; but that it is sometimes formed under circumstances where impregnation is impossible, can be proved by the most incontestible evidence.

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CHAP. II.

DISEASES OF PREGNANCY.

THE changes induced by conception frequently prove the source of disorders which assume a variety of appearances in different constitutions, and at different periods of pregnancy. These complaints are sometimes troublesome, but they seldom injure the constitution; their effects are generally temporary, their appearance and duration vague and irregular.

Some women, soon after conception, suffer the most violent sickness and feverish disposition, which harasses and distresses them for several months; and, in some instances, continue during the whole term of gestation. In others, the breeding symptoms disappear after the early months. Many women feel no inconvenience but from the weight and pressure of the bulky uterus in the advanced months; while others

others enjoy a more than usually good state of health and spirits in these situations.

In the pregnant state, the menses are always stopped; and consequently the determination of the blood is altered. From this difference of determination many of the symptoms of pregnancy may be accounted for; particularly the appearance of a general, and sometimes of a local, plethora. It must be confessed, however, that many of the symptoms appear to be entirely of the nervous kind, and not readily explicable; but they are such as often arise from the stoppage of any accustomed evacuation.

In the advanced states of pregnancy, the pressure of the uterus on the surrounding parts produces many complaints, which we can with more certainty refer to their proper cause.

#### SECTION I.

##### DISEASES DURING THE THREE FIRST MONTHS.

THE most common symptoms of breeding are, sickness and loathing, vertigo and drowsiness,

lowness, heartburn and diarrhœa, painful tension of the mammæ, nervous fits, deliquia, &c.

**SICKNESS AND LOATHING.** A slight degree of feverish indisposition, nauseating sickness, or vomiting, chiefly in the morning and after food, are in some instances almost coeval with conception; and the appetite is so whimsical and capricious, that the most extravagant and unaccountable substances are anxiously wished for.

The sickness from breeding is sometimes so severe as to resemble sea-sickness, and it is often as little in our power to relieve it. These early symptoms have been generally ascribed to the stoppage of the menses, although they commence often before the obstruction occurs. In many constitutions, however, particularly in the young and healthy, a certain degree of plethoric disposition, even in the more early periods of pregnancy, seems to prevail; small bleedings, therefore, where the sickness is attended with flushings, dry parched mouth and fauces, vertigo, or other symptoms of fever,

ver, are safe and beneficial, and often give all the relief in our power to afford. Although a rash, indiscriminate, or frequent use of venæsection is to be guarded against as a hazardous expedient, it may often, if prudently employed, be the means of preventing abortion. It may be safely performed at any time of gestation, and repeated according to the urgency of the symptoms. But small bleedings are always to be preferred to copious evacuations; which, in every period of pregnancy, especially in the early months when the hazard of miscarriage is greatest, should be avoided.

When the stomach appears affected, along with constant loathing, or frequent retchings, the offensive matter should be discharged by gentle vomits of ipecacuan, or of infusions of chamomile flowers, or of columbo. The violent efforts of natural vomiting, which threaten the most disagreeable consequences, and sometimes actually throw off the conception, are in some instances entirely removed, in many cases greatly

greatly diminished, after the operation of a gentle emetic.

Small doses of rhubarb should be given to keep the body moderately open: the patient should also be put on a course of light aromatic and strengthening bitters; and her diet, air, exercise, and amusement, should be properly regulated.

In constitutions of the nervous irritable kind, opiates sometimes procure a temporary relief from sickness and vomiting, when every other remedy fails.

VERTIGO AND DROWSINESS.—These proceed from plethora, connected with a particular state of the nervous system. Small bleedings, when very troublesome, gentle exercise, an abstemious temperate diet, and every means of obviating plethora, and diverting the attention by promoting a cheerful state of mind, are the best remedies.

HEARTBURN, DIARRHOEA, &c. are common symptoms of breeding sickness, and must be treated nearly in the same manner as similar complaints from other causes. They chiefly depend on the state of the stomach,

mach, peculiarly influenced by that of the uterus. The acescent tendency of the stomach should be obviated, and the digestive faculty restored.

TUMEFAC-TION, TENSION, *and* PAINS in the MAMMÆ.—If tight lacing be avoided, and the breasts be permitted to expand, no material inconvenience will arise from their enlargement. These symptoms are the natural consequence of a natural cause, and seldom require medical treatment. If they should be very troublesome and uneasy, gentle friction with oil, or anointing with pomatum, and covering them with soft flannel or fur, will in most cases lessen the painful tension. In plethoric habits, where painful hardness and swelling are excessive, and do not readily yield to more simple remedies, venæsection and moderate purging may be necessary.

DELIQUIA, NERVOUS or HYSTERIC FITS. Lowness and depression of spirits are incident to the early stages of pregnancy, and are merely the effects of uterine irritability communicated to the nervous system;

system; for the mind, as well as the body, is then peculiarly susceptible of irritation.

FAINTINGS more seldom occur, except about the time of quickening. They seem to arise from the sudden change of position of the uterus, emerging from its more close confinement within the bony parietes of the pelvis, and from the irritation communicated by the child's motion. They are commonly slight and transient, and leave no bad effects behind them.

DELIQUIA, which are occasioned by falls, frights, and passions of the mind, are of more serious consequence, and the shock is frequently fatal to the child.

THE complaints which occur in the early months require a variety of treatment in different circumstances. When symptoms of fulness appear in young women formerly healthy and accustomed to live well, indicated by pain or giddiness of the head, flushings in the face, and heat in the palms; or when the sickness is constant or excessive—venæsection, an open belly, with abstemious

stemious diet, and every other means to obviate plethoric disposition, must be used. But in opposite circumstances, where there is the appearance of nervous delicacy, along with symptoms of dyspepsia and consequent debility, bleeding must be avoided with the strictest care. Nourishing diet given in small quantities, and often repeated, the moderate use of cordials, good air, cheerful society, easy exercise, variation of scene, suited to the peculiar circumstances of the patient, and, in a word, those means adapted to soothe or diminish sensibility and irritability of the system, and keep up the general health, are the most proper.

## SECTION II.

### DISEASES OF ADVANCED PREGNANCY.

THE disorders which attend the advanced months of gestation, are more sudden in their occurrence, more painful in their symptoms, and more dangerous in their consequences, than those of the early months.

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The loss of the child, and a temporary weakness, from which the mother, under proper management, soon recovers, are the worst consequences to be dreaded from the latter: But, from the compression of the bulky uterus on the contiguous viscera, their important functions are impaired, the circulation in the vascular system and the nervous influence are materially interrupted, and the most fatal event is sometimes produced.

The disorders incident to advanced gestation chiefly are,—suppression or difficulty of passing urine, retroverted uterus, costiveness, piles, œdematous swellings, varices, colic, cramps, pains in the back or loins, cough, dyspnœa, vomitings, stranguary, or incontinence of urine, convulsions, &c.

ISCHURIA and FREQUENT MICTURITION. These symptoms are occasioned by the pressure of the uterus on the neck of the bladder, before the fundus uteri rises above the brim of the pelvis. The retention of a small quantity of urine at that time is a powerful stimulus to void it. If that is neglected,

ed, and the bladder becomes distended, painful ischuria ensues. Women under such circumstances should be cautioned to avoid crowded places, and every situation which exposes them to disagreeable restrictions. A slight degree of suppression, if early attended to, will seldom prove troublesome or hazardous. It only requires a constant attention to obey the dictates of Nature, when the call to evacuate the urine is urgent; to keep the belly regular; to lie down on a bed or sofa from time to time, when pained or uneasy; and carefully to guard against fatigue, and confinement in a crowded place, till the uterus be so much enlarged, as to be supported by resting on the expanded bones of the ilia.

**RETROVERTED UTERUS.** As the gravid uterus enlarges it becomes too bulky to be longer confined within the bony cavity; but in consequence of any extraordinary exertions, violent fatigue, obstinate constiveness, or the distention of the bladder with urine, it sometimes not only is prevented  
from

from emerging above the brim of the pelvis, but also has its fundus forced downwards, falling back into the inferior posterior part of the pelvis; the os tincae being drawn up towards the pubes making the superior part, and the fundus forming the most depending part of the tumor.

This reflected state of the prolapsed gravid uterus is styled *retroversion*; and is readily known by the symptoms, and from the period of pregnancy in which it occurs.

It chiefly occurs between the middle of the third and the end of the fourth month of pregnancy. The symptoms are, an increase of those usually occasioned by painful distention of the bladder with urine, constant weight, and uterine pain and pressure, tenesmus and other symptoms sometimes resembling the severest throes of labour. A tumor may in that case be felt to the touch between the vagina and rectum, which occupies the whole inferior capacity of the pelvis, prevents the finger from passing into the vagina, and presses against the

perinæum and anus, like the child's head in time of labour.

In the beginning of the disease, the urine is voided with difficulty; in the progress, stools and urine are totally retained. As the bladder distends, it draws the cervix uteri up with it; the uterus, growing bigger and bigger, sinks lower, spreads out beyond the inferior circumference of the pelvis, and occasions constant straining and pressing. The throes at last become so violent, that the uterus seems ready to be protruded without the vulva. The inferior lateral openings of the pelvis yielding to the distended cause, as they do in real labour, the tumor becomes so bulky, as, in some instances, to elude the possibility of reduction\*. Laceration of the coats of the bladder, inflammation communicating to the viscera, delirium or convulsions, and fatal event soon ensue, if the means of relief are neglected or prove ineffectual.

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\* See Dr Hunter's Plates of the Gravid Uterus, Pl. xxvi. London Medical Observations and Inquiries, Vol. IV. Art. xxxvi.

The cure consists in restoring the uterus to its proper position, and guarding against the hazard of relapse.

Previous to attempting the reduction of the uterus, the counteracting obstacles must be removed. With this view, repeated venæsection may be necessary; fomentations, or the semicupium, should be used to diminish swelling and inflammation; the catheter should be passed to evacuate the urine; and the rectum should be washed out with repeated glysters.

The reduction of the uterine tumor should then be attempted, by placing the patient on her knees and arms, with her head reclined and properly supported, endeavouring, by every possible means, to restore the uterus to its proper position. The force employed should be gentle at first, pressing backwards and upwards in different directions (to force the fundus uteri above the brim of the pelvis), not by starts, but constantly and equally, gradually increasing the exertions of force, as far as

they can safely be carried, till the end in view be obtained.

After the reduction the patient must be confined mostly to bed, and the distention of the bladder and rectum must be carefully prevented, till the uterus rises completely above the brim of the pelvis, when she will be secured from future danger. But if the obstinacy of the disease should render every effort ineffectual either to evacuate the urine or replace the uterus, it has been proposed to puncture the bladder at the pubes; and if that should fail to facilitate the reduction, to thrust a trocar into the substance of the uterus to procure abortion; or to enlarge the pelvis by incision at the symphysis pubis, in order to accomplish the reduction of the uterus.—The first of these proposals affords the only prospect of saving the patient; for its success has been proved, by experience, in a case detailed by Dr Richard Browne Cheston\*.

#### COSTIVENESS.

\* See London Medical Communications, vol. 2. p. 6.

**COSTIVENESS.** This symptom is a common attendant of pregnancy. The causes are, the pressure of the gravid uterus, a disordered state of the stomach, and sedentary life.

It may be obviated or prevented by attention to diet, and the occasional use of gentle laxatives; of these, ripe fruit, magnesia, cream of tartar, soluble tartar, lenitive electuary, ol. ricini, or an aloetic pill, when the patient is not subject to any hæmorrhoidal affection, or has been formerly accustomed to it, are the most proper.

But in cases of obstinate costiveness, to break down and remove indurated scybali, emollient glysters, occasionally rendered moderately stimulant with soap, or a small proportion of common salt, ought to be repeatedly exhibited.

**PILES**—are small tumors placed a little way within the rectum, or protruding like varicous swellings without the verge of the anus, attended with throbbing pain, heat, itching; frequently with fever and restlessness, and sometimes liable to frequent or

excessive hæmorrhagies. Their chief exciting causes are, costiveness, and venous plethora from gestation.

The treatment should be directed nearly on the same principles as similar cases from other causes, with the precautions which pregnancy suggest. Costiveness must be obviated by cooling laxatives; of which cream of tartar and flowers of sulphur are the best. General or topical bleedings should be used, to lessen plethora or local inflammation; and fomentations and cataplasms, emollient or faturine, applied, to disperse the swelling, or promote suppuration. For allaying the pain often attending piles when the inflammation is removed, an ointment composed of equal parts of powdered galls and axunge, has been much recommended. *Bals. capivi* is also an excellent remedy in piles, and keeps the belly moderately open.

OEDÆMATOUS SWELLINGS of the *Legs*, and sometimes extending to the thighs and labia, arise from the same cause with the preceding complaint, viz. venous plethora from  
the

the pressure of the uterus. They are merely symptomatic, and only attended with a temporary inconvenience; as almost in every instance, where the constitution is otherwise unimpaired, they subside immediately after delivery.

The best palliatives are—small bleedings and gentle purgatives, with a light spare diet, if the patient be full and plethoric; if otherwise, strengthening diet, the moderate use of cordials, an open belly, frequent rest on a bed or couch; and, in either case, easy exercise when she is able to bear it, and friction with a flesh brush, applied to the legs evening and morning, to promote the circulation and absorption of the stagnant fluids.

VARICOUS SWELLINGS are merely distensions of the coats of the veins from venous plethora, occasioned by pressure of the gravid uterus. They are generally confined to the legs or thighs, and seldom proceed so far as to burst and throw out their contents. When very large or painful, gentle evacuations may be necessary; and topical astringent

gent applications used, to remove local laxity; as compresses soaked in any styptic liquor, retained by the application of a bandage. A moderate pressure on the part by compress and bandage, when the accumulation is considerable, will, in most cases, be sufficient to remove any inconvenience occasioned by the swelling, till delivery: soon after which, they generally disappear, or are considerably lessened.

PAINS in the BACK or LOINS, COLIC, CRAMP,—are occasioned by the stretching of the uterus, or by its pressure on the neighbouring parts, particularly on the diaphragm. They are most troublesome in a first pregnancy, or when the distention of the abdomen is enormous.—Small bleedings, gentle laxatives, a light spare diet, and occasional opiates, are the best palliatives.

If the patient be of a full habit, and where a disposition to inflammatory complaints prevails, any violent fixed pain about the back or loins, along with fever, or in the abdominal viscera exciting symptoms of *Colic*, is highly alarming and dangerous

gerous in advanced gestation where the pressure is great. The threatening event can only be prevented by repeated venæ-section, and the antiphlogistic treatment.

CRAMPS are sometimes very troublesome towards the latter end of gestation. They are chiefly confined to the legs and thighs, more rarely they affect the belly, and are most troublesome during the night. Their exciting causes are, the stretching of the womb, or its continued pressure on one particular part.—When frequent or violent, and the habit is full or plethoric, bleeding is necessary. The sudden exposure of the body to cold, or change of posture, as getting out of bed and walking about, may be often sufficient to give a temporary relief; and opiates may be useful to lessen nervous irritability.

COUGH, DYSPNOEA, VOMITINGS, DIFFICULTY OR INCONTINENCY OF URINE.—The cause of these complaints in advanced gestation is sufficiently obvious. The former of these symptoms are chiefly to be alleviated by small bleedings, gentle laxatives,  
light

light spare diet, and opiates. The patient should be placed when in bed in an easy posture, with her head and shoulders considerably raised, and the bed-room should be as large and airy as possible. Bandages, advised by many when the uterus rises very high, are dangerous expedients for altering its direction; and stricture in dress, with a view to hamper and confine the uterus, can never be employed with safety.

To prevent the consequences of frequent micturition or incontinency of urine a suspensory and thick linen compress, or sponge, should be constantly worn, and occasionally shifted as it becomes damp.

CONVULSIONS. The appearance of convulsions in pregnant women is frightful; the symptoms are alarming; and the event is always precarious, often fatal.

Headach, intolerably violent or intense pain or oppression about the præcordia, are the most common presaging symptoms.

At whatever term of gestation, there is great danger; but in the advanced months, the

the disease is more desperate. The danger is also to be judged of by the violence of the symptoms, the duration and recurrence of the fits, the exciting cause and constitutional temperament of the patient, and her condition during their remission.

Increased irritability from pregnancy, probably predisposes to this complaint.

Uterine irritability communicated by sympathy to the encephalon, and pressure of the gravid uterus interrupting the circulation through the abdominal viscera, disturbing their functions, and changing the determination both of the circulating fluid and nervous energy, are perhaps the most ordinary exciting causes. They may also arise from inanition, in consequence of profuse hæmorrhagies, or other debilitating evacuations; or be occasioned by mechanical injury of the uterus, from violent bruises, wounds, &c. and by passions of the mind, and every other cause sufficient to bring on convulsions in the unimpregnated state.

Hysteric or nervous spasms are readily distinguished from convulsions. The former

mer, are milder than the latter in their symptoms; and much less frightful in appearance, by the absence of foamings and distortions. They have no sensible effect in bringing on labour; they are seldom followed with bad consequences; and yield to the common treatment. Women of vigorous constitutions, rigid fibres, and plethoric habits, are more usually the subjects of the latter: the delicate, the nervous, and irritable, of the former.

Convulsions, during pregnancy, may occur at three distinct periods, viz. in the early months, in the latter, and at the commencement of labour.

1. Those which appear in early gestation, chiefly happen to young women of a plethoric habit, and can only be obviated or palliated by a free use of the lancet, by gentle purging, cooling regimen, and low diet. After some evacuations in this way, if constant nauseating sickness indicate a disordered stomach, a mild emetic may be of use; but it should never be employed without previous blood-letting.

In

In opposite circumstances, a different treatment must be directed. Opiates, or castor and musk given internally, emollient glysters, warm fomentations applied to the legs, the semicupium, and every means to soothe nervous irritability and remove spasmodic stricture, will then prove the most effectual remedies. When it cannot be received into or retained in the stomach, opium, in large quantities, should be exhibited by way of glyster.

When the patient is totally insensible and comatose, stimulating purgative glysters should be given; and epispastic and stimulating cataplasms, in order to rouse her, should be applied to the legs and hams.

In the intervals of the paroxysms, or after they have ceased, the patient, when languid or much reduced, must be supported by nourishing diet and suitable cordials: and when she is no longer able to swallow nourishment, it must be supplied by way of glyster.

2. In the advanced months, the attacks are more sudden, the progress more rapid, and

and the event more fatal, than in early gestation: therefore the most active and vigorous measures are necessary; for, like apoplexy, a fit or two then, in some instances, terminates the disease with the loss of life. If any treatment can prevent the threatening catastrophe, immediate and copious venæsection, occasionally repeated, may chiefly be relied on.

Other means for lessening plethora, obviating the effects of violent agitation, and rendering the system less irritable, must afterwards be employed, and the treatment in other respects should be directed according to particular circumstances.

3. Lastly. When convulsions come on along with labour-pains, they must be palliated by some of the means already directed, till the delivery can be safely assisted by art.

SECTION III.

DISEASES WHICH REQUIRE PECULIAR TREATMENT  
WHEN THEY OCCUR DURING PREGNANCY.

BESIDES those hitherto enumerated as more immediately deriving their origin from pregnancy, other disorders sometimes occur which may then require some variety from the usual management. These are chiefly paralysis, nephritis and calculi, herniæ, dropsy, leucorrhœa, venereal complaints, fevers.

PARALYSIS is generally local, and chiefly confined to the lower extremities, or may be traced by the course of the nerves to depend on the pressure of the uterus. The treatment can only be directed with a view to palliate till delivery. Gentle exercise, moderate evacuations when the habit is full, under opposite circumstances, strengthening diet and regimen, with warm applications and friction, are the principal remedies.

NEPHRITES and CALCULI. The former must be palliated by venesection, diluent drinks, opiates.

If a calculus stick in the urethra, and the woman is near her time, it should, if possible, be pushed back into the bladder with the catheter: otherwise, when easily come at, the stone may be cut upon and extracted.

HERNIÆ. Some of these are cured by pregnancy; others continue during the whole term of gestation. Bandages can seldom be used with safety in the pregnant state; at least tight pressure by the common umbilical bandage must be avoided. In time of labour, herniæ must be carefully supported with the hand during a pain; after delivery, future inflammation and its consequences must be guarded against; the usual bandage must again be applied, when the patient is sufficiently recovered to be able to stay any time out of bed after delivery.

The HYDROPS ASCITES—in pregnant women sometimes also occurs; and will, during that state, only admit of palliation. The belly must be kept open; the evacuation of urine, as much as possible, must be promoted by cream of tartar, dried squills, and the like; and gentle exercise must be used.

used. If, however, the abdomen be much distended, the respiration difficult, and other symptoms urgent, the water may be safely drawn off by the operation of the paracentesis.

THE FLUOR ALBUS or LEUCORRHOEA—is sometimes cured, sometimes increased, by gestation. Except the little variety which an attention to the gravid state requires, the cure is the same as at other times.

GONORRHOEA and LUES VENEREA.—The cure of the former is to be conducted in pretty much the usual manner; that is, by keeping the parts clean by frequent bathing, by drinking freely of diluent drinks, by an open belly and cooling diet. If complicated with ulcers and chancres within the labia, or any where about the vulva, the prudent use of mercury becomes requisite: It may either be given internally, or rubbed on the skin by way of unction.

In the confirmed lues, we can only, in general, propose to stop the progress of the disease, or palliate the severity of the symptoms. But, in early pregnancy, when the constitution is good, and the season favour-

able, if a mercurial course be regulated with prudence, both mother and child may obtain a radical cure. The proper time for entering on such a course is between the third and sixth months. When a radical cure is attempted, the safest method of administering mercury seems to be in the way of unction: As a palliative, the solution of corrosive sublimate is the most powerful preparation. To prevent diarrhœa and colic complaints, opiates should always be conjoined.

FEVERS.—Women are less subject to febrile disorders during pregnancy than at other times. There is, however, an universal heat all over the body; which with some is a symptom of conception, and with others continues during the whole term, that hardly deserves that name.

The limits of the present work do not admit of our entering into any disquisition on the nature of fever in general, or on the treatment of the variety of species. All great evacuations must then be avoided, and also whatever might excite any violent shock  
to

to endanger abortion and its consequences. The treatment must in other respects be directed on common principles, attending to the management necessary to be observed in circumstances so peculiarly critical.

## SECTION IV.

## OF FLOODINGS AND ABORTION.

ABORTION, and its common attendant FLOODING, are neither confined to the early nor latter months, but happen indiscriminately at every period of gestation. The one is a frequent consequence of the other, and the event is often hazardous. In the earlier months, a considerable discharge of blood frequently precedes the expulsion of the ovum; and, in the latter stages, the effusion is sometimes so excessive as to endanger the mother's life.

Their more frequent terms of occurrence are in early gestation, the second and third; in advanced pregnancy, the fifth and seventh months.

I. FLOODING.—The *Mænorrbagia Gravidarum* may be defined, “A vague or irregular appearance of blood from the uterus, during pregnancy, subject to no periodical returns, but liable to recur from very slight occasional causes.”

The immediate cause of flooding, both in the early and latter months, is a total or partial separation of the ovum.

In the early months the exciting causes are,

- a. Plethora or an increased determination to the uterine vessels.
- b. Weakness of those vessels.
- c. Mechanical injuries.

Before the fifth month of gestation, flooding, however alarming it may appear to ignorant observers, can never prove dangerous, unless under the most improper management; because the diameters of the bleeding vessels are so small that they can be made to contract completely by means of cold applications.

The mode of treatment, in such cases, must be regulated by circumstances. If  
evident

evident marks of plethora appear, venesection should be ordered, rest and a cooling regimen enjoined, and the neutral salts, in small doses, frequently repeated, prescribed; the great object in view being to moderate the impetus of the heart and arteries.

Where the separation of the ovum seems to have been induced by debility of the vessels or by accident, and whenever the discharge is profuse, whatever have been the exciting cause, topical applications are to be chiefly depended upon. Cloths, therefore, soaked in cold water should be applied to the lumbar region, to the pubes, and to the external parts; or a bladder, filled with a solution of sal-ammoniac in cold water, may be applied to the lower part of the belly. Should these means fail, a quantity of lint, soaked in any astringent fluid, ought to be stuffed into the vagina—a remedy much used by French practitioners, and certainly efficacious at the period of gestation alluded to.

By thus keeping the patient quiet and cool, by giving internally cooling drinks

and opiates, and by the application of cold to the organ affected, the hæmorrhagy may be restrained, though threatening and alarming; and the woman, after several attacks, may, under proper management, be enabled to carry the child to the full term of delivery.

Debility and relaxation must afterwards be removed, by nourishing diet and tonic remedies; and, in relaxed habits, the hazard of relapse guarded against by the use of the Peruvian bark, moderate exercise, and the other remedies usually employed after cases of profuse menorrhagia. In full habits, or where there is an evident disposition to plethora, gentle evacuations, cooling regimen, and an abstemious spare diet, are the best prophylactics.

In the latter end of pregnancy, when the hæmorrhagy proceeds from the separation of a portion of the cake which adhered at the cervix, over the orificium uteri, the deluge is sometimes so impetuous as to kill the mother very suddenly. The only method, then, in our power, for preserving  
both

both the parent and child, is by an *expeditious delivery*; I mean expeditious with respect to the time it is attempted, for the operation of delivery should be slowly performed.

In all cases of flooding, when any portion of the pulpy substance of the placenta can be felt by the finger to present before the child, delivery should be performed as soon as the orifice of the womb is sufficiently relaxed to admit of the introduction of the hand, after gently stretching\*: and if the repetition of floodings without pain be frequent, or the discharge be so profuse as to bring on faintings, it may be necessary to deliver, even though there should be no sensible dilatation of the uterine orifice, and though no part of the placenta can be felt to the touch; for, if the woman is previously much exhausted, she cannot be saved out by delivery.

II. ABORTION.—Abortion is “The premature expulsion of the fœtus.” It comprehends

\* See a valuable essay on this subject by Mr Rigby.

tends every period before the evolution of its system be sufficiently complete to enable the child to exist after the connection with the parent is dissolved.

Abortion is commonly preceded by some of the following symptoms: Flooding, pains in the back or belly, uterine bearing-down pains with regular intermissions, and the discharge of a watery fluid.

If, along with flooding, any portion of a vascular skinny substance, which is the *membrana decidua*, should be discharged, abortion will in general ensue. None of the other symptoms are infallible; even the evacuation of a watery fluid is not necessarily followed with delivery, since it may proceed from a collection on the outside of the ovum, between the lamellæ of the membranes. In the early months excessive floodings sometimes occur; and yet, by proper management, the woman is often enabled to retain the child.

There is less fear of abortion while the blood evacuated is pure and without clots, unattended with uterine pain and pressure. But, in forming a judgment, the constitution,

on, occasional cause, and term of gestation, must be regarded.

Abortions happen more frequently from the beginning of the second to the end of the third month, than at any other period.

The immediate cause of abortion is the same with that of real labour.

The predisponent causes of abortion are,

1. Diseases of the general system, as debility, irritability, and plethora.
2. Diseases of the uterus, as rigidity, weakness, irritability, and habit of miscarrying.

The exciting causes exist either in the mother or child.

In the former they consist of all acute diseases, violent passions of the mind, mechanical injuries, excessive corporeal agitation, and every thing capable of exciting the premature action of the uterus.

In the latter they consist of every circumstance which can injure any part of the ovum, or destroy the life of the embryo.

The size of the abortive ovum in early gestation is as follows Six weeks; after conception, its bulk is nearly equal to a pigeon's

geon's egg ; in eight weeks, to that of a hen ; and in twelve to that of a goose.

Where there is reason to dread abortion, all probable means ought to be employed to relieve painful symptoms by rest and opiates, to check hæmorrhagy in the way already directed, and to obviate exciting causes as much as possible ; and the woman should be encouraged to hope as long as there are grounds for it.

As abortion, in many instances, is preceded by no alarming symptom, till a discharge of watery fluid, or an excessive flooding with clots and portions of the decidua, announce the approaching event ; either to remove immediate symptoms, or prevent the accident that is dreaded, often baffles our boasted skill ; for the circulation in the ovum perhaps had ceased a considerable time previous to any threatening symptom of its expulsion.

Little, therefore, can or ought to be done by way of treatment, besides obviating plethora, advising rest of body and tranquillity of mind, and guarding against every cause of irritation. Though the mother may suffer

er a considerable shock from miscarriage, and it may be some time before her constitution be sufficiently restored for any future fortunate pregnancy, women are rarely known to suffer fatally, except from mismanagement, in the early months. Any manual operation to assist delivery, is seldom necessary at an earlier period than the sixth month of gestation, unless the mother's life should be in danger from flooding. When this happens, the bag may be broken by thrusting the finger against it in time of pain, or endeavouring to assist its expulsion when within reach of the finger; but otherwise the delivery should be *wholly* trusted to Nature. It is even hazardous to destroy the structure of the ovum in the early months: for when it breaks, the small foetus is first expelled; and the bag or placenta may be afterwards retained for a week or more, during which time the flooding often continues to be excessive; whereas, if the conception comes off entire, the effusion generally ceases immediately.

From long retention, the placenta, being unconnected with the womb, is liable to  
 become

become putrid: it is then expelled in different portions; and inflammation, excoriation, or gangrene of the uterus and vagina sometimes ensue. In these circumstances there is a necessity for keeping the parts clean, by frequent bathing, or by injections thrown into the vagina; and bark, with elixir of vitriol, should be given freely. Gently stimulating glysters, to promote the contraction of the uterus, in cases of retention of the placenta, where there is no great flooding, are often useful.

As women who have once aborted are liable to a repetition of that accident from a similar or very trifling occasional cause, it ought to be guarded against by every possible means. With this view, the management during pregnancy should be properly regulated.

#### SECTION V.

##### MANAGEMENT DURING PREGNANCY.

THE regulations during pregnancy may be referred to the following rules.

1. The strictest temperance and regularity

ty in diet, sleeping, exercise, and amusement, are necessary to be observed by those who have reason to dread abortions.

2. Overheating, irregular passions, and obstinateness, should be constantly guarded against.

3. The hazard of shocks, from falls in walking or riding, from bruises in crowds, or frights from bustle, should be avoided with the utmost circumspection.

4. The dress of pregnant women ought to be loose and easy. Tight lacing is injurious at every period of gestation. In the early months, by preventing the uterus from rising out of the pelvis, it endangers miscarriage; and it is still more hazardous in the advanced stages. Jumps, without knots, buckles, or whale-bone, secured with straps of broad tape or ribbon, should be had recourse to soon after conception, and worn constantly.

5. Pregnant women require free, pure air; their inclinations should be gratified by every reasonable indulgence; and their spirits kept up by cheerful company and variety

variety of objects, that their minds may be always composed and happy.

6. If complaints occur, they should be treated nearly as at other times, with the precautions formerly suggested of avoiding all great evacuations and violent exertions. Draftic purges, stimulating glysters, emetics towards the term of quickening or any other critical period, strong diaphoretics or diuretics, shocks from electricity or the cold bath to those who have not been accustomed to them, the hazard of accidents from riding or sailing, and of the consequences of irritation from the action of blisters or the absorption of cantharides in particular circumstances and constitutions, ought to be carefully guarded against. In the early months, abortions might be readily occasioned from such hazardous expedients; and in the latter, the most alarming and dangerous floodings.

7. Lastly, with a view to prevent abortion in cases of habitual predisposition, in plethoric habits, or in those of an opposite temperament, occasional causes must be obviated, and the particular fault in the constitution corrected.

## PART III.

### LABOURS.

#### INTRODUCTION.

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##### § I. GENERAL OBSERVATIONS.

WHEN the uterus can admit of no greater distention, without a material, or probably fatal, disorder from its impeding the several functions, labour ensues.

At this period, the organization of the fetus is sufficiently evolved to enable it to continue its existence; and as it derives no injury from a longer delay, so it can survive a slight acceleration of this important change.

The period of gestation varies in the several classes of different animals. The mare, the cow, the ewe, and the goat, are restricted,

ted, each within its proper limits. In the human species, nine kalender months seem necessary for the perfection of the fœtus; that is, nearly 39 weeks, or 273 days from conception. The term does not, however, appear to be so arbitrarily established, but that Nature may transgress her usual laws; and, as many circumstances frequently concur to anticipate delivery, it certainly may in some instances be protracted. Individuals of the same class of quadrupeds, it is well known, vary in their periods of pregnancy. May we not, therefore, from analogy, reasonably infer, that women sometimes exceed the more ordinary period? In several well attested cases, the birth appears to have been protracted some weeks beyond the common term of delivery. If the character of the woman be unexceptionable, a favourable report may be given for the mother, though the child should not be produced till nearly ten kalender months after the absence or sudden death of her husband.

LABOUR is “an effort of nature to expel

pel the contents of the gravid uterus." It is chiefly accomplished by the spasmodic contraction of the uterus itself. The diaphragm, muscles of the abdomen, and others concerned in respiration, and all the muscles of the body, are called in as auxiliary powers. These efforts alternate with intervals of ease; and the exertions, or paroxysms, continue till the child is propelled, and the uterus completely emptied of its contents.

The *final cause* of labour is, the birth of the child.

*Spurious pains* frequently occur towards the latter end of gestation. Their causes are a slight degree of irritation of the uterus from excessive stretching; spasmodic affections of the abdominal viscera; or any stimulus communicated from the intestinal canal, as colic from costiveness and other causes. They often nearly resemble labour, and ought to be carefully distinguished from it.

They are more vague and irregular, both in frequency and force, than those arising

from genuine labour ; they do not produce any sensible change on the orificium uteri ; they are not attended with any considerable discharge of the ropy mucus, which sometimes precedes, and always accompanies, the first stage of real labour. They are generally confined to the lumbar region, or to the belly, without striking down the thighs ; they are commonly most troublesome towards evening, occasion inquietude and restlessness in the night, and abate in the morning. They are further known to be spurious, by the relief procured from glysters and opiates.

*Genuine labour* is known to approach from the circumstances which usually precede it : the progress is marked by the duration, force, and frequency of the pains ; by their effects on the general system ; but more particularly by the dilatation of the uterine orifice, and protrusion of the water and child.

The *symptoms of approaching labour* are, the subsiding of the abdominal tumor at the superior part ; hence, at first, a relief  
from

from weight, pressure, and uneasiness formerly felt; afterwards a discharge of ropy mucus from the vagina, sometimes tinged or streaked with blood, commonly styled the *show*; then, slight pains of the belly or loins, frequent micturition, tenesmus, sometimes colic or diarrhœa, extreme restlessness, alternate rigours, and hot fits.

The throes of labour usually commence with pain in the region of the loins, which spread round forwards and downwards, and again extend from the belly to the pubes, shooting down the thighs. At first they are vague, more slight and transitory; but gradually increase in force, and recur at more regular intervals.

Sickness of the stomach, retching, and vomiting, alternate rigours and hot fits, in some instances accompany the earliest symptoms of labour; in others, horripilation occurs in the progress, and seems then to be occasioned by the pressure of the head of the fœtus against the irritable uterine orifice.

Pyrexia, in young plethoric women, is a frequent attendant of labour; for, with increased pain, the face becomes flushed, the pulse full, strong, and accelerated, along with dry parched mouth and fauces, and the other symptoms of fever, styled by authors *febris parturiens*.—Ischuria, or suppression of urine, and sometimes an involuntary discharge of fæces, ensue.

The *progress of labour* generally proceeds in the following manner:

In consequence of the great discharge of lubricating moisture, the genital parts are first relaxed, and then gradually begin to dilate. The membranes also gradually separate from the internal surface of the uterus; and, by its spasmodic contractions, they with the contained water are protruded in form of a soft, yielding bag, before the presenting part of the child. In the absence of the pain, the waters retreat; the membranous bag is relaxed, or flaccid; and the child, if within reach, can be distinctly felt through it. When the pain recurs, the membranes become tense and turgid; spread

spread out more and more; and advancing lower and lower as the pains increase in force and frequency, they gently and safely stretch and dilate the passages preparatory to delivery, in a manner which no human artifice can possibly imitate. When that important end is accomplished, the slender bag, yielding to the propelling force, gives way, and the contained fluid is evacuated.

In a natural easy labour, the progress of the head of the fœtus through the pelvis corresponds with the protrusion of the membranes and dilatation of the soft parts. The head advances in a mechanical manner, its large axis being applied to that of the pelvis. When the vertex is nearly arrived at the lower circumference of the bony cavity, the membranes give way; soon after which the pains are renewed with increased force. The vertex advances through the axis of the vagina; the occiput gradually emerges from under the arch of the pubes; and the soft parts at the bottom of the pelvis beginning to be protruded in form of a tumor,

the os externum is gradually dilated. As the occiput rises from below the pubes, the face is turned towards the concavity of the sacrum: the forehead presses against the moveable coccyx; the vertex now protruding without the os externum, and the stimulating exertions becoming so excessive as to throw the whole frame into the most violent agitation, the os externum is forced open, and the head of the child propelled. After some interval of ease, the pain, in a more moderate degree, recurs; and continues till the child is completely excluded, the shoulders making nearly the same mechanical turns with the head.

When the woman has somewhat recovered the shock, the uterus again renews its contractions: and, by a more gentle and moderate exertion of the same powers by which the membranes were separated and protruded and the child was propelled, the placenta is detached from its adhesion to the womb, forced downwards to the orifice, and expelled.

This

This is the manner and progress of natural easy labour. But a variety of circumstances frequently concur to disappoint our hopes, and render the birth tedious and painful. The original position of the fœtus in *utero*; the bulk, shape, and solidity of the head; the age, constitution, and previous condition, as well as present health and management of the patient; the action of the uterus itself, considered as a hollow muscle; the rigidity of the os tincæ; the construction and capacity of the pelvis; the texture of the membranes; the tightness or constriction of the vagina; the resistance of the os externum, &c. occasion an astonishing variety in the degree of pain, the progress or duration, and manner of termination of labour. Practitioners should therefore be cautious of giving an opinion respecting the time of delivery, at least till the progress be considerably advanced.

A judgment of the duration and event of labour is chiefly to be derived from the force, continuance, and recurrence of pains: from the resistance of the os tincæ, or the  
contrary;

contrary ; from the period when the membranous bag is ruptured ; from the position of the child's head, and relative proportions that obtain between it and the pelvis.

Young women, apparently well proportioned, of a lax fibre and healthy constitution, may be presumed to have easy, favourable labours. We may expect the delivery to be tolerably easy and expeditious, when the pains come on regularly ; when the child presents properly ; when the membranes begin early to form a bag, and protrude without the os tincæ ; when that part is thin, soft, and yielding, and is felt by the touch to dilate sensibly by the force of the pains ; when the head of the child can be felt through the membranes during the remission of pain, advancing progressively through the pelvis, preceded by the amnion tumor ; when, on the rupture of the membranes, it is found situated in the lower part of the cavity of the pelvis, the orificium uteri being quite dilated.

But, even under these circumstances, the progress of labour is often unexpectedly interrupted

interrupted by the remission or diminished force of pains for a considerable interval; by the constriction of the vagina after the os tincæ is completely dilated; or, by the rigidity of the external parts, [though no obstacle should occur from any defect in the construction of the pelvis:

In some instances, the progress is retarded by the early rupture of the membranes, slow dilatation of the os tincæ, feebleness of the throes, and a variety of other causes. Nothing can therefore be more difficult, than to ascertain, or guess at, the time necessary to accomplish the wished-for event. The more ordinary limits of a natural easy labour are from six to twelve hours; it is, however, sometimes completed within two hours, and sometimes requires several days. But the first labour is generally, from obvious causes, the most painful and tedious.

§ 2. DIVISION OF LABOURS.

THE ancients, as far as can be collected from their writings, divided labours into  
two

two kinds ; Natural and Preternatural. The first included head, or, according to some, head and breech, presentations ; and all others were implied in the latter. There is however some reason to believe, that dead children formed a third division.

In different authors we find different arrangements, and the classification is still arbitrary. That of DR SMELLIE appears to be little liable to exception. He refers all labours to three general classes : 1<sup>st</sup>, Natural ; 2<sup>dly</sup>, Laborious ; and, 3<sup>dly</sup>, Preternatural. He calls those cases *natural*, where the head presents, and the child is expelled by the natural pains ; *laborious*, when the head presents, but the birth is uncommonly protracted, or requires the interposition of art ; and *preternatural*, when any other part but the head first presents, or when the feet are delivered before the head.

A great variety of divisions and subdivisions, however, still prevails among modern practitioners ; and different explanations have been given by different authors to the same terms. Such indefinite distinctions  
serve

serve to involve the subject in obscurity ; and to mislead and embarrass inexperienced practitioners.

All distinctions ought to be restricted to those cases merely which require a different mode of practice. With this view, labours may with propriety be referred to DR SMELLIE'S general division of three classes ; Natural, Laborious, and Preternatural ; or Dr DENMAN'S arrangement may be adopted, by which preternatural labours include only cases where the foetus presents by other parts than the head ; and labours complicated with flooding, convulsions, prolapsus of the cord, &c. are comprehended under a fourth class, called complex.

### § 3. MANAGEMENT OF LABOURS.

IN all labours, three distinct periods, or stages, may be marked.

1. The dilatation of the orificium uteri.
2. The delivery of the child.
3. The separation and expulsion of the placenta and secundines.

Of

Of these the first is by much the most tedious, and the management of the patient during it is nearly the same in all labours: for, whatever time may be necessary to accomplish it, this first stage should, in almost every instance, be trusted to Nature; dangerous floodings (very rarely local defects in the soft parts) only excepted.

The third stage seldom requires much assistance from art.

In the second stage chiefly, a variety of management in different circumstances becomes necessary.

We shall first give a few directions for the treatment of Natural Labour in its three several stages; and then concisely direct the variety of management in the particular Cases of the other Classes.

C H A P. I.

N A T U R A L L A B O U R.

**L**ABOUR is said to be natural when the head of the child presents, when the contractions of the uterus alone are sufficient to propel the infant, and when the patient is safely delivered within twenty-four hours from the commencement of real labour.

Little else is required in the treatment of this species of labour, than to obviate with care every circumstance which might prove an obstacle to the operations of Nature. To prevent confusion in our discussions, it is necessary to direct, under separate heads, the management adapted to the several stages.

SECTION I.

FIRST STAGE OF NATURAL LABOUR.

**O**N the commencement of labour, certain preparations for the delivery ought to be made.

made. Thus a proper bed-chamber for the patient should be chosen; the bed should be so arranged as to be defended from moisture, and the dress of the woman adapted to the operation she is to undergo.

The bed-chamber should be well aired, having a lofty ceiling, and admitting the bed to be so placed as to be equally distant from a confined and an exposed situation. It should be rendered perfectly clean in every respect.

The bed must be so made as to be commodious for the patient, and at the same time defended from moisture, and fitted to allow the superfluous clothes to be easily removed.

With the dress of the patient a practitioner has seldom any concern; but, when consulted on this subject, he ought to recommend such dress as is suited to the state in which the patient expects to be, and to the climate and season.

As the contractions of the uterus appear not a little influenced by passions of the mind, particularly the depressing passions,  
and

and as all women feel an involuntary dependency at the beginning of labour, it is an object of much importance to endeavour to inspire confidence and hope in the patient.

Besides the ordinary means by which this purpose may be accomplished, particular care is necessary not to offend her delicacy by any professional interference, till the pains be strong and frequent, and till she herself be convinced that assistance is necessary. Before that time she should be permitted to walk about the room, or even the house, and to amuse herself according to her fancy.

When the practitioner has satisfied himself that matters are in a favourable train, there is no further occasion for his interference until the rupture of the membranes, when he should again be assured that there is nothing uncommon.

## SECTION II.

## SECOND STAGE.

AFTER the complete dilatation of the os uteri, the head of the infant, if not retarded by the membranes, is forced by the action of the uterus into the cavity of the pelvis; and at last is pressed against the perinæum. During this process, nothing more than the obvious attentions is required of the practitioner, except taking care that the patient be in bed on her left side, and that he be never at any distance, as the progress of the child is sometimes exceedingly rapid.

When the head of the infant is forced against the external parts, what is termed the perineal tumor is formed, and the patient suffers much uneasiness by the perinæum being protruded with violence during every labour throe.

Experience has proved, that the uneasiness from this cause is considerably alleviated by gently pressing the protruded part, with

with the palm of the hand, during every pain; and reason confirms the propriety of the practice—Thus the head is expelled through the orificium externum, merely in consequence of the resistance opposed by the perinæum, &c. for that orifice is not in the direction of the axis of the pelvis, which the head would necessarily follow were there no resistance.

Practitioners, however, ought to be cautioned against making too violent pressure on the perinæum, as inflammation, with all its consequences, might be the effect.

After the head is delivered, there is seldom any danger: the shoulders accommodate themselves to the passage; and the birth may then be safely facilitated by the hands of the operator, if any assistance should happen to be necessary. The patient, however, should be allowed to rest for a minute or two after the child's head has been excluded, and the shoulders should not be forcibly pulled out, nor the child's body suddenly extracted.

The child should be immediately removed,

ved, as far as the cord will permit ; if it is twisted about the neck, body, or limbs, it must be disengaged : and, after the child has shown signs of life, the cord must be tied. If the child has suffered from the compression of the head, the string may be safely suffered to bleed a little ; or, if it appears to have been lately dead, the usual means, for its recovery, should be employed, either before or after it is separated from the mother, as circumstances shall direct.

Certain symptoms, as lowness, sickness, shiverings, cramps in the lower extremities, &c. occur sometimes during the first and second stages, and being of temporary duration, require no other than palliative treatment.

### SECTION III.

#### THIRD STAGE OF LABOUR.

THE secundines are separated and thrown off by the same powers which had expelled the child, viz. the contractions of the uterus.

rus. These, however, do not, in general, act till some little time after the expulsion of the infant, in consequence of the fatigue which the woman undergoes during that operation.

The approach of the expulsion of the placenta is commonly announced by the discharge of some clotted blood, and by a slight degree of uterine risus, called by the women *grinding* or *gripping pains*.

The diminished bulk, and shifting of the abdominal tumor, which may be felt by the application of the hand externally, afford the best means of information *when* to attempt assisting the expulsion of the secundines; and, in general, enable us to judge whether any other child be retained *in utero*.

The cord must be twisted round the fingers of the right hand, so that a firm hold be obtained; two fingers and the thumb of the left hand should also be applied, to grasp the cord within the vagina. The advantage of a pain, when it occurs, should always be taken. The cord must be pulled

from side to side, and backwards towards the perinæum, endeavouring to drag in such a direction as to bring the central part of the cake through the axis of the uterus and pelvis, and desiring the woman to employ her own exertions moderately by bringing a deep inspiration and bearing down gently; but, violent efforts of coughing, retching, sneezing, or straining, should be carefully avoided, lest dangerous floodings or deliquia might follow. It is known to advance, by the lengthening of the cord, and the straining of the woman. When the bulky part of the mass arrives at the ostium, the inverted cake, pressing against the orifice in a globular form, sometimes gives considerable resistance. This obstacle may be removed, either by passing up two fingers of the right hand, guided by the cord, to bring down the edge; or by waiting a few minutes, then pulling gently at the cord with the left hand, and pressing on the substance of the cake with the fingers of the right, higher and higher till the edge can be brought down, which must be grasped

grasped firmly, the funis being still extended with the other hand. The whole substance of the cake, with the membranes, being at last entirely disengaged, are to be gradually extracted, put into a basin, and removed.

But, if the placenta does not advance when the cord is fully extended, and the woman suffers considerable pain, the operator must immediately desist; lest, by carrying the attempt further, floodings might be occasioned, the cord be ruptured, or the uterus inverted. A soft warm cloth should then be applied to the os externum, and the patient allowed to rest for five minutes. If it does not yet advance, ten or fifteen minutes more should be waited for; and, in the interval, a moderate degree of pressure on the abdomen, in different directions, may promote the contraction of the uterus, and assist the separation. By gradually proceeding in this manner, and patiently waiting for the contraction of the uterus, the placenta will be protruded so low, that the centre can be felt, the edge

brought down, and the extraction safely accomplished.

#### SECTION IV.

##### DEVIATIONS FROM NATURE IN THE THIRD STAGE OF LABOURS.

**I**N by far the greatest number of cases the placenta is disengaged and expelled within an hour after the birth of the child; but sometimes it is retained for a much longer period if the interference of art be not interposed.

The causes of its retention in utero are, atony of the uterus, irregularity of action of that organ, and diseased state of the placenta itself.

If no uterine pains occur for some time after the expulsion of the child, and if the cord be not lengthened, the first of these causes may be suspected.

It is best obviated by recruiting the strength by some gentle cordial, rubbing the abdomen with the hand, or applying heat

at to that part, and pulling, from time to time, cautiously, by the cord.

The second cause is indicated by frequent violent action of the uterus, and may be ascertained by actual examination.

It has been asserted, that it might perhaps be safe practice to delay manual assistance even for a day or two, as there is every probability that during that time the cake shall be thrown off; yet, as such a delay might be sometimes productive of the most serious mischief, prudence suggests that it is inadvisable.

The best practice, therefore, is to give a large opiate, as forty or fifty drops of rect. opii. and when the patient begins to grow drowsy to introduce the hand, and to overcome gently and gradually, though steadily, the constriction of the uterus. The cake will be probably found disengaged; and at any rate is to be firmly grasped in the hand and completely removed.

Diseased state of the placenta, the third  
cause

cause of retention, consists of an induration of that substance, together with so strong an adhesion to the uterus, that, in some cases, it is impossible to separate the one from the other, without laceration, even after death. This induration proceeds from an approach towards ossification ; and, indeed, sometimes ossified points are observed throughout the substance of the cake \*.

Of all the causes of retention, this is the most difficult and dangerous. The case is intricate and perplexing. If the placenta remains, and nature fails to expel it, the woman generally dies from uterine inflammation and gangrene. She is often also the unhappy victim of the unsuccessful attempt of the operator : for the uterus has been torn by the officious or unskilful efforts of the practitioner ; or mortal floodings, inflammation, or gangrene have ensued.

If

\* Some observations on this subject are detailed, p. 77. in *Select Cases of Midwifery*, extracted from the records of the Edinburgh General Lying-in Hospital, with remarks by James Hamilton, junior, M. D.

If, in these circumstances, we should wait for the natural expulsion, the woman may be quickly destroyed by flooding, from partial separation. If we attempt to force a separation of the adhesion, by tearing the placenta from the uterus with the fingers, while that organ is in a state of atony, a fatal deluge from the destruction of vascular substance may ensue before the hand could be withdrawn from the uterus.

The best and safest practice, in these alarming cases, is to insinuate the hand with the utmost caution and tenderness; attentively examine the cake, by feeling every part of its substance; carefully avoid tearing by force at that place where the diseased hardness is; separate cautiously that portion which is loose and soft, and which yields to gentle efforts; the rest must be left to nature, to be expelled with the cleansings, or destroyed and discharged by means of supuration.

Upon the whole, it is equally hazardous to precipitate the expulsion of the placenta, or to trust implicitly to the powers

powers of nature. From rash or violent attempts to extract the cake, the most shocking accidents, as inversion of the uterus and mortal hæmorrhagy, have frequently happened. And, on the other hand, the retention of the secundines, beyond the period of twenty-four hours, is most generally productive of malignant or hectic fever, or of fatal flooding, several instances of which I have met with in practice\*.

The extremes, therefore, of rash unnecessary interference, and of timid procrastination, in affording assistance, should be equally guarded against, and every practitioner ought to lay it down as a general rule, never to leave the patient until the placenta be disengaged, or, at least, until so much of it be extracted as is consistent with safety.

## CHAP.

\* See Mr White's valuable treatise, particularly cases, 11. 12. 13. 14. and 15. and Dr Kirkland's treatise on Child-bed Fevers, p. 158 and 164.

## C H A P. II.

## LABORIOUS LABOURS.

EVERY case where, although the head of the child presents, the delivery is not terminated within twenty-four hours, from commencement of real labour, may be styled laborious.

Under this title, three orders of labours are comprehended, viz.

I. Those where, although the process of delivery be protracted beyond the ordinary period, the efforts of nature eventually expel the child.

II. Where the interposition of art is required to accomplish the delivery, but where such means may be employed as shall injure neither mother nor child ; and

III. Where it is impossible to extract the  
infant

infant through the natural passages without diminishing its bulk.

The causes of laborious labour are, diminution of the propelling powers, increase of the resisting ones, or a combination of both. These are occasioned by some fault of the mother or child, or both.

#### SECTION I.

##### FIRST ORDER OF LABORIOUS LABOURS.

THIS order corresponds with what was styled, in the former editions of this work, lingering labour : the present arrangement we have adopted at the suggestion of Dr Osborn \*. It is designed to render the study of this subject less perplexing to young practitioners, a purpose which it appears well calculated to fulfil, notwithstanding the objections of some authors.

When the labour is protracted beyond the more usual limits, the woman becomes  
anxious

\* See Dr Osborn's *Essays on Laborious Labour*, p. 50.

anxious and dejected ; the pains occasionally remit and recur with frequency and violence, or alternate with imperfect and irregular intervals of ease ; the progress is slow and imperceptible ; her spirits are exhausted from restlessness and apprehension, while the pains abate she insensibly falls into short but unrefreshing slumbers. In the case under consideration, the resisting at last yield to the propelling powers, and the labour, after perhaps a period of two or three complete days, is accomplished with perfect safety both to mother and child.

After a labour has by its duration ceased to be natural, the first object of the practitioner ought to be to determine the order of laborious labour to which it properly belongs. This is, in many cases, ascertained with great difficulty ; and although some general rules may be established to direct the judgment under such circumstances, yet these are to be regarded as being liable to many exceptions.

It is by an attentive consideration of the following

following circumstances that it can be determined, in laborious cases, whether the efforts of nature shall be adequate to the expulsion of the child, or whether artificial delivery be inevitable.

1<sup>st</sup>, The previous history of the patient.

2<sup>d</sup>, The duration of labour.

3<sup>d</sup>, The state of the patient's strength.

4<sup>th</sup>, The apparent efficacy of the labour throes.

5<sup>th</sup>, The progress of the child, and the state of the passages\*.

The cause of this order of labours most frequently is, diminution of the propelling powers, and, at any rate, the increase of the resisting ones that sometimes occurs in such cases is seldom the sole cause of difficulty.

The propelling powers are diminished in consequence of some circumstance affecting the mother, such as the following :

a. De-

\* On this subject Dr Osborn has made some valuable observations, p. 56.

- a. Debility.
- b. Passions of the mind.
- c. Torpor of the uterus.
- d Over distension of the uterus.

The resisting powers are increased by some fault on the part of the mother, or of the child and secundines.

On the part of the former, they are increased by

- e. Distension of the urinary bladder.
- f. Rigidity of the os tinæ.
- g. Rigidity of the external parts.

On that of the latter, or of the child and secundines, by

- h. Increased bulk of the infant.
- i. Unfavourable position of the head.
- k. Rigidity of the membranes of the ovum.
- l. Premature laceration of those membranes.

To these causes some authors have added

Obliquity of the uterus.

Anchylosis of the os coccygis, and

Unusual shortness of the funis umbilicalis.

It does not, however, appear that any decided proofs have been produced to establish these as causes of lingering labour.

As the causes now enumerated exist singly or combined, the labour will be less or more difficult and painful.

In all these cases, the great object ought to be to gain time; and hence every means that can inspire confidence and encourage patience should be employed.

The method of obviating the several causes, we shall now concisely direct.

I. *Debility*.—Lowness and faintness often occur at the beginning of labour, and have a considerable influence in retarding its termination. They happen chiefly to women of weak nerves, or others whose health has been impaired from previous sickness or mismanagement, and accompany the first part of labour only. In its progress, the woman acquires fresh vigour and additional resolution; the pains become strong and forcing; the delivery, even where  
the

the patient appears to be weak and exhausted, often has a safe termination, though several days should be necessary to accomplish it; and the recovery is as favourable as if the whole management had been regulated by the wishes of the attendants\*.

In cases of lowness and depression, the great object to be aimed at is to gain time, to support the patient's strength and spirits, to guard against putting her on labour too early, and to use every means for reserving her strength and resolution. When the pains are slow and trifling, when she is restless, anxious, and dejected, opiates often produce the happiest effects; they remove grinding fruitless pains, recruit the spirits, and amuse the patient during the tedious and painful time. We can scarcely aim at more; for, though the dilatation of the uterus, and progressive steps of the labour, advance

\* I have attended a patient three days and nights, and one whole fourth day, without danger: the woman crooked, and the child large. She lived all the time on tea and gruel only. *Dr Hunter's M S. Lectures on the Gravid Uterus, article Difficult Labours.*

advance by slow degrees, under proper management, and while no alarming symptoms occur, no danger from delay is ever to be dreaded.

*Passions of the Mind.*—All violent emotions of the mind influence greatly the progress of labour; and hence every circumstance, which can tend to excite these, ought to be with great care avoided.

*Torpor of the Uterus*—is most ordinarily the effect of officious interference; and is best overcome by refraining from all attempts to assist delivery for several hours.

*Over-distension of the Uterus.*—The over-distension of the uterus impairs the action of its muscular fibres, and may for some time prevent those spasmodic efforts by which the os tincæ is opened and the fœtus expelled; there may be also other causes of torpor, or want of irritability, of which we are ignorant. Excessive distension of the uterine fibres can only, however, have a temporary effect to retard the labour; and it is little in our power to obviate the defect, till the membranes can be ruptured  
and

and the water evacuated ; the uterus then coming in close contact with the body of the foetus, the head will begin to press against the orifice, and the pains become strong and forcing.

But, as many inconveniences are known to ensue from an early discharge of the waters, that expedient should be the result of the most cautious and deliberate reflection ; and should never be had recourse to till the orifice be sufficiently dilated.

II. *Distension of the urinary bladder*—in tedious labours frequently occurs ; and, besides contributing to retard the delivery, is productive of much danger. It should be early guarded against by abstinence from drink ; and, when it does happen, ought to be removed as soon as discovered, by evacuating the urine, gently pressing back the child's head with the fingers, when the introduction of the catheter is difficult.

*Constriction or Rigidity of the cervix, or Orificium Uteri.*—This is one of the most common causes of lingering labours ; it

chiefly occurs in elderly women, in strong robust constitutions, or where the intervals between child-bearing have been distant. If the orificium uteri, instead of kindly opening with the pains, and becoming thin, soft, and dilatable, should form a thick ring or flap, stretch slowly, while the pains are frequent, but unprofitable, a tedious labour may be expected. But, though the labour be lingering, if we have only patience to wait on Nature, we shall generally find her efforts sufficient: for, in a first labour, or when the woman is advanced in life, and the parts are dry and rigid, from 36 hours to three days may be required for the dilatation of the orifice of the womb; yet if the management be properly regulated, neither the mother nor the child will be in danger, and the mother's recovery will perhaps go on as favourably as if the delivery had been accomplished in a few hours. The best means for removing the impediments under consideration are, blood-letting, opiates, and exhibiting, from time to time, glyster containing

containing a large quantity, as 60 or 80 drops of tinct. opii.

*Rigidity of the external parts.*—The resistance of the soft parts is a very frequent cause of tedious labours; hence robust women suffer more than those who are of a delicate frame. In the former, the parts are tense and rigid, and stretch slowly. In the latter, they are more relaxed, soft, and yielding. This cause of difficulty is best obviated by blood-letting, the application of unctuous substances to the external parts, and above all allowing time for the gradual dilatation. Every attempt to stretch the parts, by manual operations, is productive of great injury.

III. *Increased bulk of the Infant.*—The bulk of the child may be originally considerably above the common standard, or it may be greatly increased in consequence of the putrefaction, which soon succeeds the death of the infant, when that event happens during labour.

In either case, if there be no other cause of difficulty combined, the powers of Nature may be, in general, very safely relied on.

*Unfavourable position of the head* — When the head is not applied to the passages through which it must be forced, so as to occupy the least possible space, a greater than usual degree of force is required to propel it, and hence the process of delivery must be protracted.

If the other circumstances of the case be favourable, no extraordinary assistance whatever is required. The strength of the patient must be supported; and every means should be adopted which can tend to encourage her to indure with patience the protracted suffering.

*Rigidity of the Membranes of the Ovum.* — From this cause, the birth is, in some instances, rendered tedious; but, as the same effect is more frequently produced by the contrary, and the consequences are much more troublesome and dangerous, practitioners should be exceedingly cautious of  
having

having recourse to the common expedient of breaking them till there be a great probability that the difficulty proceeds from that circumstance ; and, even then, it ought not to be done till the parts be completely dilated, and the head of the child well advanced in the pelvis.

Many inconveniences ensue from a premature evacuation of the waters ; for the parts then become dry and rigid ; the dilatation goes on more slowly ; the pains often either remit, or become less strong and forcing, although not less painful and fatiguing ; the mouth of the womb, which was previously thin and yielding, may be observed to contract, and to form a thick ring, for some time obstinately resisting the force of the pains ; the woman's strength languishes, and her spirits are overcome and exhausted ; and, at last, the child's head becomes locked into the pelvis, merely from want of force of the pains to propel it.

An inconvenience of *too great rigidity* of the membranes is, that the child at full  
time

time may be protruded, inclosed in the complete membranous bag, furrounded with the waters. But such instances seldom occur. When the whole ovum is thus protruded at once, there is hazard of flooding from the sudden detachment of the placenta and membranes. It should, therefore, be prevented by breaking the membranes, when they advance and spread out at the os externum.

The method of breaking the membranes is, to pinch them between the finger and thumb; to push a finger against them in time of a pain; to run the stilet of a catheter through them; or, when they are applied in close contact with the child's head, they must be destroyed by scratching with the nail, but care ought to be taken lest the scalp of the child's head, covered with mucus, should be mistaken for the membranes.

*Premature rupture of the membranes.—*

The inconveniences, and even dangers, which result from the too early rupture of  
the

the membranes, have been just hinted at, and consequently that accident should be very carefully guarded against.

Where labour is rendered lingering from this cause, the practitioner should endeavour to diminish, for he can seldom entirely suspend, the premature action of the uterus, that the strength of the patient may not be exhausted by the unavailing throes. This purpose is effected by opiates.

Thus in all cases belonging to this order of laborious labour, the event will be favourable, provided the practitioner be not persuaded, by the importunate intreaties of the patient and attendants, to interfere officiously and prematurely. And experience has proved, that women, in whom the process of delivery has occupied the space of several days, have frequently as favourable and expeditious recoveries as those in whom the whole operation had been accomplished within a few hours.

## SECTION II.

## SECOND ORDER OF LABORIOUS LABOUR.

THE 2d order of laborious labour comprehends those cases where, although the head presents, the efforts of nature are insufficient to accomplish delivery, and where such means of art may be employed for that purpose, as shall injure neither mother nor child.

This order is distinguished from the former by considering the previous history of the patient, the situation of the child's head, and the state of the passages.

The cause generally is deficiency of action of the propelling powers; but sometimes this is combined with increase of the resisting powers, in consequence of unfavourable position of the child's head.

The means adapted to effect the delivery, under such circumstances, must, therefore, be calculated both to supply an acquivalent

to

to the propelling powers, and to alter the situation of the child's head.

The instruments that have been had recourse to with these intentions, are fillets, the lever of Roonhuyfen, the lever of Lowder, and the forceps.

Fillets are now no longer used in laborious labours, because it was found that they could not be applied without much difficulty and danger, and that even when applied they afforded little power to the operator.

The lever of Roonhuyfen, as it is at present used, consists of "a piece of iron curved at each extremity, thirteen inches and a half long, one inch and an eighth in breadth, increasing to an inch and an half at that end which is commonly used, carefully smoothed and rounded at each extremity, in the manner the forceps are usually finished, plain on its inner surface, but with its back convex, and of a sufficient thickness to prevent its bending during the operation of extracting the head; the curves

are

are nearly equal, and about the depth of the largest of Roonhuysen's; one extremity is made thinner and narrower than the other." \*

As it is impossible to employ this instrument without making some part of the woman the fulcrum on which it acts, and as, where the resistance to be overcome is considerable, the pressure thereby induced is productive of much injury, judicious practitioners have laid aside the lever of Roonhuysen as well as the antient fillets.

The instruments therefore which alone are, and ought to be employed in the management of this order of labours are, Lowder's lever and the forceps.

Lowder's lever "consists of a blade and handle, (between which there is a hinge that renders it portable,) measuring in length  $11\frac{1}{2}$  inches. Its length before it be

\* See London Medical Communications, vol. 2. p. 447. containing some account of the invention and use of the lever of Roonhuysen, by R. Bland, M. D.

The curved is  $12\frac{1}{4}$  inches. The curve begins about half an inch from the hinge. It describes, reckoning an inch from its first curvature, as nearly as can be estimated, an arc of 87 degrees of a circle, the radius of which is four inches. The breadth of the blade at the beginning of the curve is half an inch, and is gradually increased, till within three quarters of an inch of the extremity, when it measures an inch and three fourths. Its extremity is semicircular. Within two and half inches of the extremity, there is an oval opening measuring  $2\frac{1}{2}$  inches in length, and  $1\frac{1}{4}$  at its greatest breadth. By this opening, the depth of the curve is considerably increased without rendering the instrument inconvenient in its introduction\*.”

The forceps is an instrument composed  
of

\* For a particular account of this Instrument, the reader is referred to an Essay on the subject, by James Hamilton, jun. M. D. in the 8th vol. of the 2d Decade of Dr Duncan's Medical Commentaries.

of two pieces adapted to embrace firmly the head of the child. Since the original invention, the forceps have undergone a variety of improvements. The instrument of this kind, that seems to me best contrived to answer the purposes for which the forceps are designed, is nearly of the same shape with that improved by Dr Wal. Johnston. Its length is eleven inches; that of each handle  $4\frac{1}{2}$  inches. If a straight line be drawn through the centre of the plane surface of one handle, and be produced to the extremity of the instrument (which forms the axis of the handles when both are joined), the convex edge of the blade, at the greatest distance from this line, is distant  $1\frac{1}{8}$  inches, and the extreme distance of the point on the opposite edge is  $\frac{1}{16}$  of an inch. When both blades are joined, their greatest width is  $2\frac{3}{4}$  inches. The right hand blade has a hinge between the handle and blade, by which it is easily introduced while the patient lies on the left side.

In some cases, a pair of longer forceps  
than

than the above is found necessary, but the greatest length that ought ever to be used should not exceed twelve inches; and much experience in applying the instrument is required, before a practitioner can with safety venture to employ one of even that length.

§ 1. *Method of Using Lowder's Lever.*

Lowder's lever may be had recourse to either while the head of the child is still situated very high in the pelvis, or when it rests on the soft parts at the outlet of that cavity.

1. In the first case, it is to be applied over the occiput of the child, so that the extremity of the instrument be within a very little of the nape of the neck.

Where there are uterine pains, the operator should draw down only during a pain, exerting all the power of the instrument upon the occiput of the child, so that there shall be no injurious pressure on the parts of the woman. During the intervals, he should rest, and should wrap a soft

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warm

warm cloth round the handle of the lever. Where there are no pains, the operator must imitate, as nearly as possible, the natural efforts, by drawing down only from time to time.

In this manner, the head should be drawn down till the whole of it be completely within the cavity of the pelvis; to accomplish which it will, in some cases, require the continued exertions of the practitioner for several hours, and, in some cases, for a much shorter time. This depends entirely upon the state of the uterine action; for, where the labour throes co-operate, the operation is greatly facilitated.

When the head is brought thus low, if any circumstance should happen to render immediate delivery necessary, or eligible, the forceps ought to be employed; for it is in the power of the operator to finish the extraction of the head, when in the position alluded to, much more expeditiously by means of the forceps than of the lever.

2. When it is resolved to apply, or to  
continue

continue the application of the lever after the head has been made to rest on the parts at the outlet of the pelvis, the instrument should be kept pressing on the occiput, until the face shall be completely turned into the hollow of the sacrum, when its situation must be changed by applying it over the chin, so as to press on that part.

In operating with the lever in this position, the practitioner should support carefully the perinæum with his left hand, while with his right he should press with the instrument in such a manner as to imitate the process of Nature, by disengaging the chin from the breast, and making the occiput rise under the arch of the pubes.

§ 2. *Method of Using the Short Forceps.*

The short forceps can never be used with advantage, unless the head of the child be completely, or nearly so at least, within the cavity of the pelvis.

The instrument is to be so applied that each blade shall embrace the head by an

equal number of points of contact; for which purpose the blades are to be placed over the ears.

The convex edge of the forceps must always be so situated as to be immediately, or eventually, towards the hollow of the sacrum.

The position of the patient should be on the left side in bed. This is best suited to her comfort, for every unusual position alarms women much.

Previous to the introduction of the instrument, the exact situation of the head of the child should be ascertained; the bladder and rectum of the patient should, if necessary, be emptied, and the blades of the instrument should be warmed and lubricated.

That blade which is most difficultly applied should be first introduced.

The operator should insinuate two fingers of one hand over the ear of the infant, and then pass the blade of the instrument along his fingers, till it be brought into the proper situation.

Should

Should any resistance oppose the passage of the blade, it is to be overcome by gentle insinuation, and not by force.

The first blade being thus applied, the fingers of the hand (that had been introduced) must be withdrawn, and those of the other hand insinuated at the opposite part of the pelvis, so as to be placed over the other ear; and then the second blade must be passed up with the same precautions as the first, taking care that they shall be exact antagonists to each other, and that their locking parts shall be so placed as to be readily brought together.

The blades are now to be locked, and, if they be properly applied, this is accomplished without any difficulty. As in doing this, some of the external parts of the woman are exceedingly apt to insinuate themselves between the locks, and hence occasion much pain, care must be taken to prevent that circumstance.

When it is found impossible to lock the blades without using great force, the last introduced blade should be withdrawn,

the position of that remaining should be carefully adjusted, and the other blade again introduced with all the necessary attentions and precautions. It is dangerous to attempt turning the blades from one situation to another while within the pelvis. The blades, thus locked, must be secured in their position by passing a fillet round the handles.

Before beginning to draw down, the operator should ascertain that the blades are properly applied, that there may be no danger of their slipping off during the operation.

The extraction must be attempted with one hand only, the other being employed to guard the perinæum. As safety, not expedition, is the object in view, our efforts should be very slowly and gently performed, approaching as nearly to Nature as it is possible for art to achieve. An inconsiderable exertion of mechanical power continued, or frequently repeated, will accomplish the end as effectually as, and much more safely than, any great degree of force.

The

The instrument, therefore, should be moved only during a pain, if there be any, and, if there be no pains, only from time to time.

In extracting, the two great objects to be attended to are, to retain a secure hold, and to accommodate the head to the passages through which it is to be brought. The former of these is attained by drawing always in the direction of from blade to blade, and never straight downwards. To accomplish the latter, the mechanism of labour must be constantly kept in view.

During the intervals of acting with the instrument, the fillet, binding the handles, must be loosened, that the pressure may be taken off from the head of the child.

The greater the resistance to the extraction is, the more slowly and cautiously should the operation be conducted, as the obstacles are to be overcome by perseverance, and not by force.

When the soft parts begin to be protruded, the utmost caution is required to guard them from laceration; and, therefore, in-

stead of precipitating the delivery at this period, it is necessary, most commonly, to retard it, lubricating the parts during the intervals of extracting.

The forceps are not to be withdrawn, until the head of the infant be completely protruded without the parts, and then they are to be removed blade by blade, and the subsequent part of the delivery finished as in natural labour.

§ 3. *Particular Cases Requiring the Use of the Lever.*

In the order of laborious labour, at present under consideration, the causes of difficulty are, it has been mentioned, either deficiency of the propelling powers, or, along with that, encrease of the resisting powers by unfavourable position of the child's head. The former of these causes is occasioned by all the circumstances already enumerated in treating of the first order of laborious labours.

The unfavourable positions alluded to are, presentations of

The

The anterior fontanelle, instead of the posterior,

The face, and

The forehead.

Where the anterior fontanelle presents, the face is frequently turned under the symphysis pubis, instead of into the hollow of the sacrum. And, when the face or forehead present, the chin is sometimes placed towards the pubis, and sometimes towards the sacrum, though most frequently it is in the former of these situations. These constitute varieties of unfavourable positions.

The lever and forceps, therefore, are used in cases when the child's head is in the natural position, and when it is unfavourably situated. The cases in which the one or the other instrument is to be employed are now to be determined. But the general rules on this subject, it is to be remarked, are liable to many exceptions.

When it is found necessary to interfere, while the head has not advanced above one half within the cavity of the pelvis, its position

sition being natural, the lever is preferable to the forceps, provided there be labour throes, however slight these may be. No particular rules for the use of the lever in this case are required.

In face presentations, when it is necessary to interfere, (for the labour is not to be classed as laborious merely because the face presents) the lever is superior to every other instrument.

It is to be so employed as to bring down the occiput, by which the head is made to occupy much less space than when the face presents.

For this purpose, the instrument is to be applied over the occiput; and while the operator, with one hand, draws down the occiput, he ought, with two fingers of the other hand, to endeavour to push up very gently the chin, or in many cases, it is sufficient merely to press firmly on that part.

In some cases there is an increase of the resisting powers, rendering the labour laborious

orious in consequence of a slight deficiency of space at the brim of the pelvis. In such cases, the lever may also be advantageously employed to augment the vis a tergo.

Such are the cases in which Lowder's lever appears to be the mechanical expedient best adapted to accomplish the delivery: In many of the other cases, belonging to this order of labours, it may be used, but in general not with such advantage as the forceps. And in some of them, as when there are no pains, and the symptoms are not urgent as to require immediate delivery, it would be unjustifiable to attempt delivery with the lever, as the delay, occasioned by that attempt, might prove fatal to the patient.

#### § 4. *Particular Cases Requiring the Use of the Short Forceps.*

The particular cases, in which the short forceps ought to be employed, may be divided into those where the face is,

1<sup>st</sup>,

1<sup>st</sup>, In the hollow of the sacrum.

2<sup>dly</sup>, To one side of the pelvis.

3<sup>dly</sup>, Under the symphysis pubis.

It has been already mentioned, that unless the head be completely, or nearly so, within the cavity of the pelvis, the short forceps are inapplicable.

1. When the face is in the hollow of the sacrum, the instrument is applied with great facility, and the extraction of the head may be accomplished without any difficulty.

The general rules respecting the position of the patient, &c. having been observed, the practitioner is to insinuate two fingers of his left hand at the right side of the pelvis, and pass them over the ear of the child. He is then to introduce, with great caution, the right hand blade of the instrument between his fingers and the head of the child, and to carry it forward till its point be over the ear.

The fingers of the left hand are now to be withdrawn, and those of the right hand are to be insinuated, in the manner the former

ner had been, at the left side of the pelvis, retaining, till this be done, the blade which is applied in its proper situation, by means of the left hand, and keeping the fore-finger over its locking part to prevent its hurting the patient.

The second ear being thus felt, the first introduced blade is to be supported by the right hand, while, with the left, the second blade is to be passed up according to the general rules, and the two blades made to lock on the same principles.

In extracting, the handles are to be inclined at first as far back towards the anus as possible, till the occiput is brought fairly into the arch of the pubis, when they are to be gradually carried up towards the abdomen, that the chin may be disengaged from the breast; the operator, in the meantime, taking care to draw only from blade to blade, to operate slowly, and to guard constantly the perinæum.

2. When the face is towards one side of the pelvis, the operation is always attended with considerable difficulty.

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This case is distinguished from the former by the perinæal tumor not being formed, and by actual examination.

The first circumstance that requires attention is, to ascertain the side to which the face is ; and that is done by feeling attentively the ear placed under the symphysis pubis.

One of the first steps of the operation, in this case, is a deviation from the general rules ; for the easiest introduced blade is to be first applied instead of that which is most difficult.

That blade, therefore, which is to be placed over the ear under the pubis, is to be applied before the other ; and, according as the face is to the one or other side of the pelvis, either blade must be employed for this purpose. Thus, if the face be to the right side, the right hand blade is to be introduced under the pubes.

The one blade being thus properly applied over the ear, the other blade is to be very cautiously passed up in the exactly opposite direction, guided beyond the vagina  
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by the fingers of one hand, as the distance at which that ear next the sacrum lies prevents the fingers reaching it.

Both blades are now to be locked, with the ordinary precautions, and the extraction is to be begun. While the motion of the instrument is, as usual, to be made in the direction of from blade to blade, the face should be gradually turned by a due inclination of the handles into the hollow of the sacrum; and, when that is effected, the delivery is to be finished in the same manner as in the preceding case.

3. Where the face is turned under the symphysis pubis, the blades are to be applied exactly as if it were in the hollow of the sacrum.

The great difficulty in this case occurs in the extraction.

If the head, in this position, be completely within the cavity of the pelvis, (and unless it be so, the short forceps ought not to be applied) the object of the operator must be to extract the occiput before the face.

For

For this purpose, the handles of the instrument should be kept as much towards the abdomen as possible, while the common motion, from blade to blade, is carefully exerted. By due perseverance in this manner, the occiput will eventually be protruded, and then the face is easily disengaged by inclining the handles back towards the anus.

§ 5. *Cases Requiring the Use of the Long Forceps.*

The long forceps is an instrument which ought not to be in common use, as it is in many parts of the continent, because the operator works with it in the dark, and possesses so extensive a power by it, that he may do irreparable mischief in a very short space of time, and even without being aware of it.

For this reason, the long forceps should never be employed, unless it be absolutely necessary to finish the delivery immediately, while the head of the child is situated high  
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in the pelvis, and while there are no pains to assist the action of Lowder's lever. If, under such circumstances, there be a slight deficiency of space about the brim of the pelvis, a chance is afforded, by the use of the long forceps, of superseding the necessity of having recourse to the dreadful expedient of opening the head of the child. And if, on the contrary, under the same circumstances, the woman is well formed, and as formerly had children, or has the soft parts quite relaxed, the extraction of the child will be an operation of great facility; and the only difficulty, in the use of the instrument, will be its proper and safe application.

On the whole, if possible, no practitioner should ever employ the long forceps until he have had considerable experience in the use of the common short forceps.

The rules, for the application of this instrument, can only be learned by habit. They consist in securing a safe hold of the head, and in accommodating it to the passages through which it is to be brought.

§ 6. *General Observations on the Second Order of Laborious Labours.*

Although it has been stated, that the instruments employed in this order of laborious labours are so formed as neither to injure the mother nor child, it is not to be understood, that it is meant to assert no such injuries can follow their use. The fact is quite the reverse; for the safety of mother and child, where such expedients are had recourse to, depends both on the time and manner of their application.

Respecting the latter of these circumstances, all that is necessary, in a work of this kind, has been already detailed; but on the former subject, viz. on the time of application of instruments, some observations are required.

Nothing else than the conviction that the powers of Nature are inadequate to the safe expulsion of the child, ought ever to induce any practitioner to have recourse to instrumental delivery. The time for the employ-

employment of instruments is, when the circumstances of the case have impressed on his mind this conviction.

Were he to yield to the suggestions of his own convenience or interest, or to the impertinent clamours of the attendants, or to the importunate entreaties of the patient herself, he would frequently commit much mischief.

That it is sometimes extremely difficult to draw the proper line of distinction, by neither precipitating nor delaying too long the use of mechanical expedients, cannot be denied ; but it is the duty of every one, who means to practise midwifery, to endeavour to acquire the knowledge requisite to direct his judgment on such occasions.

### SECTION III.

#### THIRD ORDER OF LABORIOUS LABOURS.

UNDER this order are comprehended all those cases (as already mentioned) where it is impossible to extract the infant, through

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the natural passages, without diminishing its bulk.

The cause of difficulty, in labours of this kind, is such a diminution of the capacity of the pelvis, as prevents the head of the child being forced through it, either by the natural propelling powers, or by artificial means.

The precise degree of deficiency of capacity in the pelvis, which produces this effect, is not uniformly the same in every case; because, in children at the full period of gestation, the head varies very considerably in size and in compressibility.

It is impossible also to ascertain, in the living subject, with geometrical precision, the capacity of the several parts of the pelvis. There is always a risk of mistaking the dimensions by at least a quarter of an inch.

For these reasons, unless the deficiency of space be very considerable, as when the short diameter, at the brim or outlet, does not exceed two inches, it cannot be determined, at the beginning of labour, whether

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an individual case shall fall under the second or the third order of laborious labours. It is necessary to wait the result of the uterine contractions, and to ascertain, with care, the consequent progressive advancement of the child's head.

When, notwithstanding long continued labour-throes, the bulky part of the head remains above the narrow part of the pelvis, although the head be in a favourable position, and when such symptoms have supervened as render further delay of assistance dangerous or improper, then the case may be referred to the third order of laborious labour; provided it have been found, by a cautious trial, that neither Low-ter's lever, nor the long forceps, are adequate to the extraction of the child.

The diminution of the capacity of the pelvis, either at the brim or outlet, or in its cavity, is occasioned by derangement in the shape or connection of the bones, or by an accumulation of fæces in the rectum, or by swelling of the soft parts lining the pelvis,

or by diseases of the internal or external organs of generation.

It is sometimes in the power of the practitioner to remove the obstacles induced by the second and the last of these causes; that is, an accumulation of fæces in the rectum; if early discovered, may be expelled, tumours within the uterus, or on its appendages, may be pushed back, and obstructions about the external parts may be cleared by the knife.

When the obstacle, arising from deficiency of space, cannot be surmounted, as when it proceeds from the state of the bones, or the swelling of the soft parts, three expedients to accomplish the delivery have been proposed, viz. to open the head of the child and diminish its bulk, or to cut through the parietes of the abdomen, or to divide the bones of the pubes at their symphysis. The first of these is styled the operation of Embryotomy, or Embryulcia; the second is called the Cæsarean Section; and the third is termed the division of the symphysis pubis or the Sigaultian operation.

§ 1. *Of the Operation of Embryotomy.*

In this operation two objects are to be attained; the head of the child is to be opened, and its contents discharged, and the mangled infant is to be extracted. The instrument, employed with the former intention, is named perforator, and that used for the latter purpose is called crotchet.

The position of the patient in this operation should be the same as that in natural labour. The bladder and rectum, if necessary and practicable, should be emptied before the operation be begun.

If this operation be not determined on till it have been decidedly ascertained that the uterine contractions are incapable of surmounting the obstacles to the passage of the child, the proper time for performing it cannot be ambiguous; it should be performed as soon as its necessity is established.

But, in cases of very obvious and considerable diminution of the capacity of the

pelvis, the operation should not be begun till the os uteri be as much dilated as the state of the brim of the pelvis will admit.

All preliminary matters being adjusted, the practitioner is to introduce two fingers of his left hand into the vagina, so that their points shall rest on the child's head.

He is next to take the perforator in his right hand, and, having insinuated it along the fingers of his left hand introduced within the parts, he is to push, with a boring sort of motion, its point into the cranium, and to plunge it as deep as the rests.

Having assured himself that it is really within the skull, he is to separate the handles of the instrument, so that the points shall be in the direction of the longest diameter of the pelvis, guarding them carefully by the fingers of the left hand. For this purpose, it is necessary that an assistant shall hold one ring of the handles, while the practitioner himself draws out the other.

The instrument is to be shut and opened in the same direction, and with the same precautions for several times, till a very  
large

large opening into the head shall be made.  
 It is then to be withdrawn in the same  
 cautious manner in which it was introduced.

The texture of the brain is now to be  
 broken down by means of the crotchet  
 passed into the opening of the cranium;  
 and the brain is to be scooped out with the  
 fingers, or by an iron scoop, and received  
 in a basin with sand or ashes.

If after this part of the operation is finished,  
 any portion of the cranial bones be  
 found loose, or nearly disengaged, it is to  
 be removed either by the fingers or a pair  
 of small forceps. And, at any rate, the teg-  
 guments are to be drawn over the rugged  
 bones.

The second part of the operation, viz.  
 the extraction, was formerly attempted im-  
 mediately after the brain was evacuated;  
 but sometimes this was found impractica-  
 ble; and, as experience shewed that, after  
 the interval of a few hours, the difficulty  
 was often easily surmounted, practitioners  
 were

were led to inquire into the propriety of the general rule. The result was, that the rule alluded to was found to be a very improper one; and Dr Osborn has clearly proved, that many advantages accrue from delaying the extraction for 12 or 24 hours, according to circumstances, after the discharge of the contents of the cranium.

By this practice, the strength of the patient is recruited, all injurious pressure being removed, while, at the same time, the process of putrefaction taking place in the body of the infant, the extraction is more easily accomplished than it can be when the child is quite rigid.

Before any attempt be made to fix the crotchet, two fingers of the left hand must be introduced within the vagina. They are to be retained there during the whole process of extraction, or at least are to be introduced every time the crotchet is used.

The crotchet is to be applied on the inside

side of the skull, and fixed wherever the most secure hold can be obtained. Its point must be constantly and carefully guarded by the fingers.

The force employed in drawing down must be exerted only from time to time, or if there be labour throes only during their occurrence. It should be gradually increased as occasion requires.

Where there is considerable resistance, the portion of bone, in which the instrument is inserted, soon gives way. As soon as this is perceived, the practitioner must cease to draw down, and, laying the crotchet a little to a side, must remove the detached portion either by his fingers or by the small forceps.

After all the superior part of the cranium is in this way extracted, the instrument must be fixed in the basis of the skull, as in the foramen magnum, or on some part of the outside, still observing the former precaution of guarding its point.

To accomplish the extraction, not only  
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is it necessary, in cases of great deficiency of space, to use very considerable exertions of force, but also to accommodate the mangled head to the apertures of the pelvis, so as that it shall occupy the least possible room. By patient perseverance in these efforts, the extraction of the head will be at last completed, unless the diameter of the brim, or outlet, be unfortunately exceedingly short, as considerably under two inches. In such cases, the operation of Embryotomy is not proper nor justifiable.

Although the head be extracted, it often happens that much difficulty is experienced in drawing forward the body. Where the resistance is very great, the thorax should be opened by introducing the crotchet under the arm-pit, and some of the contents of that cavity should be discharged.

As it is within the verge of possibility, that a case may occur where, by the ignorance of an operator, the vertebræ of the neck

neck have been separated, and the head thereby severed from the body, while both still remain in utero, it may be necessary to direct the treatment of such a case.

In these circumstances the head, if it cannot be extracted first, must be pushed up above the brim of the pelvis; the crotchet or blunt-hook must be fixed under the axilla, the arms must be brought down; and the body extracted by fixing the crotchet below the scapula, on the sternum, or among the ribs\*; a method preferable to that of turning, as some advise. The head must afterwards be extracted with the crotchet.

§ 2.

\* Such a case actually occurred to the late Mr Robert Smith surgeon in this city, soon after he began to practise. The particular circumstances of this singular history, as communicated to me by Mr Smith himself, are as follow :--A young woman had been several days in strong labour; the head, he imagined, had originally presented in an oblique direction at the brim of the pelvis. The patient was so much exhausted when Mr Smith was called, and she was otherwise seemingly so low, that it was doubtful to him whether she could sup-  
port

## § 2. Of the Cæsarean Operation.

It has been proposed to perform this operation on the living subject, under a great variety of circumstances, as in cases of contracted passages from cicatrix, callosities, or tumours any where about the vagina or os tincæ ;

port the fatigue of delivery. The case appeared the more discouraging and unfavourable, because, on touching, he could not determine the manner in which the child presented, its head having been formerly cut off from the body by an unsuccessful attempt to procure delivery ; nor could he even positively say, whether it was a foetus, or a very singular monstrous production, from the uncommon feel which the ragged stump of the neck gave to the touch. Determined, however, to give the woman a chance of life, he fixed a crotchet in the part which presented, brought down first one arm, then another ; and afterwards, to his astonishment, extracted the trunk of a *body without a head*. On inquiry, he was informed that a surgeon in the neighbourhood had in vain, after many fruitless efforts, attempted to make the extraction, but abandoned the woman in that situation, and assured the relations it was not possible to accomplish the delivery, which they had artfully concealed from Mr Smith. The head was afterwards extracted with the crotchet, and the woman had a good recovery.

inæ; of lacerated uterus where the child has escaped partially or wholly into the cavity of the abdomen, of extra-uterine conception, of herniæ of the uterus, of unfavourable position, or extraordinary bulk, of the child; and of defective pelvis.

Unfortunately for suffering humanity, proofs can be established of the operation having been actually performed under all those several circumstances.

It ought not, therefore, to appear astonishing, that many practitioners of great eminence have strongly reprobated the operation; for it is not easy to separate in the mind the impression made by the abuse of means from the abstract consideration of the means themselves.

Another reason why many practitioners condemn the Cæsarean section is, the absurdity of the arguments in its favour, which have been urged by its partisans, and the glaring falsity of many of the cases that have been adduced in evidence of its safety and success.

When all these circumstances are considered,

dered, it is less to be wondered at that MARCHANT, MAURICEAU, PARRE, GUILLEMEAU, and more lately SIR FIELDING OULD, and DR OSBORN, should have written against it in the strongest language, than that it has not been banished from practice by the universal consent of practitioners.

Thus SIR FIELDING OULD endeavours to prove the improbability, and even impossibility, of its success from its analogy with other wounds, as well as from the anatomy of the parts. He is at great pains to invalidate the authority of BAUHIN, ROUSSET, LA MOTTE, and other favourers of the operation, by denying the facts they have endeavoured to transmit to posterity in support of it. None of these cases, he hopes, will gain credit from readers in the present age, as he considers them to be fable and imposture; and he concludes, “from reason, “theory, anatomy, and every thing consistent with surgery, that the Cæsarean “operation must be certainly mortal, and “hopes it will never be in the power of “any

“any one to prove it by experience\*.”  
In short, he calls it “a detestable, barbarous,  
“illegal, piece of inhumanity.”

DR OSBORN declaims with equal vehemence against the operation †. As upon this subject the opinions of that gentleman are exceedingly different from my own, and, as he addressed me personally in his *Essays*, I was induced in 1792 to consider the question in a separate publication ‡, to which I beg leave to refer those who wish for a full discussion of this matter.

To those engaged in the practice of midwifery, no subject can be more interesting than the investigation of the means best calculated to afford aid in cases of extreme deformity of the pelvis. Such cases, though fortunately rare, may, nevertheless, occur to any individual practitioner; and putting entirely aside, for the sake of argument,

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\* See Ould's *Treatise of Midwifery*, p. 156.

† See Osborn's *Essays*, already referred to, p. 470, &c.

‡ Entitled *Letters to Dr Osborn on certain Doctrines contained in his Essays*.

all considerations of the interests of humanity, (which, however, no man of honour will ever lose sight of in real practice) may happen to influence, very materially, his future prosperity. It is, therefore, presumed, that no apology will be required for investigating this subject a little more minutely than many of the other subjects are in this work.

No practitioner, it is hoped, would perform this operation, on the human body, from choice, for the sake of experiment. Necessity is the sole motive which can induce any one to attempt it; hence it must be determined, whether any such necessity exists. This leads us to review the several cases that have been supposed to require this expedient.

*Contracted Passages from Cicatrix, Callosity, and Tumors any where about the Vagina or Os Tincæ.*—The vagina and os tincæ are sometimes affected with constrictions from cicatrices, with callosities and tumors; but it is never necessary to perform the Cæ-  
sarean

Caesarean section on their account. Tumors in the vagina may generally be removed with safety even after the commencement of labour, and delivery will happily succeed; or it may be sometimes practicable to pass the hand by the side of the tumor, to turn the child, and deliver. There have been many instances where, at the commencement of labour, it was impossible to introduce a finger into the vagina; yet the parts have dilated as labour increased, and the delivery has terminated happily. At other times the dilatation has begun during pregnancy, and been completed before delivery. A striking instance of this kind is recorded in the *Mem. de l'Acad. des Sciences* for 1712, of a woman whose vagina was no larger than to admit a common writing quill. She had been married at sixteen, and conceived eleven years after. Towards the fifth month of her pregnancy, the vagina began to dilate, and continued to do so till full time, when she was safely delivered.

GUILEMEAU dilated, and LA MOTTE extirpated, callosities in the vagina and os

tincæ, when the children were successfully expelled by the force of natural labour.

DR HARVEY relates a case where the whole vagina was grown together with cicatrices: Nature, after a tedious labour, made the dilatation, and a large child was born.

M. LA MOTTE \* mentions his having delivered three women, who had not the smallest vestige of an orifice through the vagina to the uterus. DR SIMPSON cut through a callosity of an os uteri which was half an inch thick †, &c.

Upon the whole, tumors in the vagina, or about the orificium uteri, may be safely extirpated without danger of hæmorrhagy or other fatal symptoms, and the delivery may be thereby accomplished: and, if the vagina be impervious, the os externum shut up, or the labia grown together, the parts may be opened with a scalpel. If the os externum be entirely closed, if the cavity  
of

\* *Traité des Accouchemens*, p. 527.

† *Edinburgh Med. Essays*, Vol. III.

of the vagina be filled up, or the passage considerably obstructed by tumors, callosity, or constriction from cicatrix, and there is no reason to suspect a fault in the pelvis, of which a judgment may be formed by the common marks of deformity, under-size, or a rickety habit; it is by much the best practice to open a passage through the vagina, and deliver the woman in the ordinary way. If there be no defect in the pelvis, the head of the child, or any other bulky part that presents, will advance in this direction, till it meets with a resistance in the soft parts: the teguments, in that case, will be protruded before the child's head, in form of a tumor, when a simple incision downwards to the perinæum, in the direction of the axis vaginæ, will remove the cause of difficulty, by relieving the head; the child will afterwards safely pass, and the wound will heal without any bad consequence\*.

R 3

When

\* A case of this kind occurred to me in November 1786.

When there is any defect in the soft parts, which prevents the access of the finger into the vagina, the head of the child may be readily felt, and the state of the parts in some degree judged of by the introduction of a finger into the anus.

*Lacerated Uterus* is another cause, for which this operation has been recommended. The uterus may be ruptured from the cross presentation of the child in time of pregnancy, when the uterine fibres do not readily yield to the distending cause, or from mechanical violence in attempting delivery. These cases are generally fatal; and the life of the mother can seldom be saved by the Cæsarean section, after the foetus escapes through the torn uterus into the cavity of the abdomen; because inflammation and sphacelus have generally affected the parts of the uterus that sustained the pressure, previous to the rupture; if otherwise, convulsions or other fatal symptoms soon ensue, from the quantity of blood, waters,

waters, &c. poured into the cavity of the abdomen.

When the child cannot be extracted by the natural passages, tremors, singultus, cold sweats, syncope, and the death of the mother, for the most part so quickly follow, that it will at least seem doubtful to a humane practitioner, how far it would be advisable, after so dreadful an accident, the woman being apparently in the agonies of death, rashly to perform another dangerous operation, even with a view to preserve the child, before he had waited till the mother recruits or expires.

If part of the child be contained within the uterus, and the feet can be reached, the best practice is to deliver by the orifice of the womb. When the whole foetus has escaped entirely without the uterus, the Cæsaréan operation is recommended as the only means of preserving both mother and child.

But if the operation on this occasion be ever allowable, it may be asked,

R 4

*First,*

*First*, At what time should it be performed?

*Secondly*, Would it not have the appearance of inhumanity to have recourse to this expedient immediately after the uterus bursts, when the woman is seemingly ready to expire although it be the only time when there is a chance of saving the child?

*Thirdly*, In most cases where this accident happens, Should the Cæsarean section be made? Is it not highly improbable that the mother will survive so terrible a laceration? at least, the uncertainty how long she may survive it, seems a considerable obstacle to the operation under such disagreeable circumstances; *ne occidisse videatur, quem fors interemit.*

Should, however, the patient recruit after the accident, and it be found impossible to extract the child through the ordinary passages, a simple incision through the integuments of the abdomen, may afford the means of saving the life of the woman.

*Ventral Conception* has been said to be another

Another indication for this operation. These are either in the ovaria, tubes, or cavity of the abdomen, and seldom arrive at great size; or are retained, often for a great many years, without occasioning much complaint. The issue of these conceptions has also been no less various than extraordinary; for, after having been long retained in an indolent state, abscesses or ulcerations have formed, and they have been discharged through all the different parts of the abdomen\*.

Most women feel pain and violent motion towards the term of ordinary delivery in these cases of ventral conception; if, therefore, the operation be ever necessary, then is the proper time to perform it. But in general, as the separation of extra-uterine fœtuses from their involucra may occasion immediate death in many cases, in consequence of the vast hæmorrhagy that might

\* *Vid.* Mangeti Bibliothec. Medicin.; Journal de Scavans; Memoirs de l'Acad. des Sciences; Chapman's Midwifery; London Medical Observations; Dr Duncan's Medical Commentaries, &c.

might ensue from the non-contractile power of the parts to which they adhere, unless they point outwardly, or excite violent symptoms, their expulsion should be generally trusted to Nature.

*Herniæ of the uterus* are never sufficient indications to induce us to perform the Cæsa-  
rean section, as the uterus is very rarely influenced in such a manner that the orifice cannot be reached, and the delivery successfully made. Many instances are to be found among Chirurgical authors, where deliveries, under such circumstances, have been happily performed, without recourse having been had to so hazardous an expedient. MAURICEAU mentions a case, where the uterus in a ventral hernia was pushed along with the intestines above the belly, and contained in a tumor of a prodigious size ; the woman, however, was delivered at the end of her time in the ordinary way. M. LA MOTTE relates the history of a woman in a preternatural labour, whose uterus and child hung down pendulous to the middle  
of

of her thigh ; but whom, notwithstanding, she safely delivered. And DR RUYSCH relates a case, where the midwife reduced the hernia before delivery, although it was protruded as far as the knee ; the delivery was safely performed, and the woman had a good recovery.

*The Position or Bulk of the Child.*—Since the practice of turning the child and delivering by the feet, and the late improvement of obstetrical instruments, this operation has never been performed on account of position, monstrosity, or any other obstacle on the part of the child merely.

*Defective Pelvis.*—In discussing this reason, it is necessary to endeavour to ascertain, first, the utmost degree of deficiency of space in the pelvis, which admits the safe performance of the operation of embryotomia ; and, secondly, whether there be greater degrees than these in women capable of becoming pregnant.

*First,* The first accurate account of the operation

operation of embryulcia, having been accomplished in a very narrow pelvis, is contained in the history of a case where DR KELLIE operated.

The pelvis of the patient measured from the projection of the sacrum to the symphysis pubis, 1 inch  $\frac{5}{8}$ ths and  $\frac{1}{16}$ th ; on the right-side of this strait,  $2\frac{1}{16}$  inches ; on the left-side,  $1\frac{1}{2}$  inch. The woman had been five days in strong labour before DR KELLIE had an opportunity of seeing her. "The head remained above the brim of the pelvis; and had not then made the smallest progress. It was of a large size, firmly ossified ; and the parts in the passages were so extremely tender, that the poor woman, who was somewhat faint, and much fatigued by the protraction of labour, could not bear the most gentle examination without great pain." The Doctor proceeded to perform the operation of embryulcia, "by making a large opening in the cranium, which was effected with difficulty, on account of the head projecting so much over the pubes that the flank of the  
scissars

scissars was pressed forcibly against the perinæum, to get the points in a proper direction." He now left the patient; and on returning, in 24 hours after, "found the head advanced into the pelvis so low, that the jagged end of one of the parietal bones pressed against the inner part of the perinæum, very near the os externum. By the help of the blunt-hook only, the head was brought forth, in little more than a quarter of an hour, amazingly flattened." The shoulders and body gave considerable resistance, but were also extracted with the blunt-hook.

The patient, who seemed to do well for a week, "having imprudently drank freely of raw porter, with some people who came to see her, was afterwards seized with a violent purging, of which she died in three days\*."

The case of Elizabeth Sherwood, however, on whom DR OSBORN operated, is still more extraordinary. Her pelvis measured in the short diameter, that is, from sacrum

\* Johnson's Midwifery, p. 284.

crum to pubes,  $\frac{3}{4}$ ths of an inch.—On the left side, quite to the ilium, which was about  $2\frac{1}{2}$  inches in length, the space was certainly not wider; it was even thought to be narrower. On the right side, the aperture was rather more than two inches in length from the protuberance to the ilium; it was, at the utmost, about  $1\frac{3}{4}$  inches from the hind to the fore part, but it became gradually narrower, both towards the ilium and towards the projection\*. Yet, after the child's head had been opened thirty-six hours, the child was delivered; and on the *seventh day* the patient was as well as at any former period of her life †.

Experience has proved, that where ready access is obtained for the admission of the necessary instruments, the head of the child may, by the operation of embryotomy, be so diminished, as that its basis shall measure no more than an inch and a half when turned sideways; and hence it may be concluded, that where there is a space equal to  
an

\* Osborne loco citato, p. 75.

† Ibidem, p. 89.

an inch and an half in the most defective part of the pelvis, the extraction of the mangled infant is practicable.

But there is a material difference between the practicability and the safety of an operation.

It may, indeed, be alleged, that embryulcia has succeeded in cases where there was a deficiency of space to the above extent, and where the head of the child had been of the ordinary size. Allowing this, however, to be true, it ought not to be inferred, that in every case of similar deficiency the result would be equally fortunate.

To illustrate this it may be remarked, that in by far the greatest number of deformed pelvices, the narrowness is confined to the brim or outlet, and the cavity is much more shallow than usual. These are productive of two great advantages ; for the introduction and application of instruments is thereby facilitated ; and the resistance is confined to almost a single point. But, in some cases, the deformity is extended to both brim and outlet ; and the cavity, instead of being more shallow, is deeper than natural.

Where

Where this happens, it must be exceedingly obvious, that although the short diameter, both at brim and outlet, be equal to an inch and a half in extent, the danger attending the operation must be infinitely greater (admitting even that the necessary instruments can be used with safety), than if the deficiency were confined to either of these parts.

The following case, which occurred in the Edinburgh General Lying-in Hospital, affords a good illustration of these remarks.

Mrs Scott, out-patient, aged thirty years, imagined herself to be in labour on the evening of March 22d 1793; but her pains proved to be spurious. As her pelvis seemed to be remarkably deformed, a particular inquiry was made concerning every circumstance of her previous history. From this it appeared that, at the time she was married, namely, five years ago, she was a healthy well-formed woman; that she continued in the same state not only till she had born one child, which is still alive, but  
also

also till she was about three months advanced in her second pregnancy, when she became indisposed, and was confined to bed for some time. In consequence of this indisposition, which she attributed to exposure to cold, she lost considerably in her stature, and felt a weakness in the lower extremities, so that she was, in some degree, lame. She carried the child to the full time, and bore it with great difficulty. It was alive when born, but died in a few minutes. Although her general health was still impaired, and the loss of stature and degree of lameness continued to increase, she again conceived; and, in July 1793, she was, with great difficulty, delivered of a child at the full term, which, for a few minutes only, exhibited symptoms of life. Her recovery was, for some time, very doubtful, and eventually proved exceedingly tedious. About this time she became troubled with umbilical hernia. Towards the end of June 1794 she again conceived; but her health was still worse than before. She has now lost so much of her stature,

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that

that she considers herself to be one foot, at least, diminished in height; at the same time, her lameness has increased so much, within these four months, that she is unable to move farther than from her bed to her chair; and, to accomplish that, she is under the necessity of supporting herself on her hands as she moves along. She is incapable of standing erect without something to lean upon. Formerly she could move by the assistance of crutches; but she is no longer capable of doing so. As she cannot lie in bed above a few hours, without being affected with violent coughing, whatever position she assumes, she is under the necessity of sitting almost constantly in an easy chair. Having been troubled, during the winter, with violent pains in the shoulders, extending along the clavicles, the power of her arms has become so much impaired, that she cannot even break a piece of bread. The appearance of her countenance is not very unhealthy, her complexion being tolerably good, and her eyes lively.

On the 24th March 1795, she was brought  
into

into the hospital. She continued in her ordinary state of health until three o'clock, A. M. of the 31st, when real labour commenced. Within about two hours it was imagined that the membranes gave way spontaneously, as a small quantity, of what was deemed liquor amnii, was discharged. At four o'clock, A. M. the pains became very strong and frequent, and continued so till six o'clock, A. M. when they increased prodigiously, both in frequency and in force; for they recurred every minute, and were so strong, that, during every pain, there was the greatest reason to dread that the uterus would burst.

At this time she was examined with great care; and it was found that at the outlet, at the anterior part of the pelvis, the rami of the pubes and ischia approached so nearly, that it was with difficulty the fore-finger could be passed between them. The spinous processes of the ischia, however, appeared about two inches distant from each other, and posteriorly, the point of the coccyx seemed, at least, two inches distant

from the tuberosities of the ischia. At the brim there appeared so considerable a deformity, that it was not probable there was a greater space between the bones than a triangle in the centre of the brim, each angle of which was distant about an inch and a half from the other; and, towards the ilia, the space on each side was evidently narrower. No part of the child could be felt. There had been no evacuation from the bladder from three o'clock, A. M.; fifty drops of tinct. opii were immediately given, and an enema, containing sixty drops of the same, was exhibited.

The uterine action, however, was not, in the smallest degree, altered, for the pains continued to recur with the same frequency and force; in consequence of which the sufferings of the patient were truly agonizing. In this situation matters remained till a quarter past ten, A. M. when the head was felt to press on the brim of the pelvis. At nine o'clock, A. M. the catheter was introduced, and about half a gill of urine was drawn off.

At

At a quarter past ten, A. M. a consultation was held, and the circumstances of the case taken into very mature consideration. It was agreed to wait yet a few hours, in order to see whether the action of the uterus would force the head of the child lower.

About a quarter past eleven o'clock the pains suddenly ceased entirely. Vomiting took place. The pulse, which had hitherto been very frequent, but firm, became feeble; her countenance turned pale and ghastly; and her strength seemed very much exhausted. She had no breathlessness, and no discharge of blood from the vagina. The abdomen communicated to the hand a different sensation from what had been formerly experienced; but no inequalities, like those proceeding from the limbs of a child, were felt. The abdomen was sore to the touch. On examination, the head, covered with membranes, was found resting upon the brim of the pelvis.

As it was hoped that the exhaustion was the effect of her former sufferings, it was expected that it would be temporary only;

and, therefore, it was determined to give gentle cordials, and to wait for a return of strength.

But at half past one o'clock, P. M. the symptoms of exhaustion still continuing, while, at the same time, the patient complained of pain and great soreness in the abdomen, it was judged necessary to attempt to open the head of the child, in order to extract it by the operation of *embryulcia*. For this purpose two fingers of the left hand were introduced along the sacrum, in order to conduct the perforator to the head; but it was found that the pelvis was so deep behind, while the approximation of the ischia prevented the introduction of the perforator at the anterior part of the pelvis, that the points of the fingers could just touch the scalp of the head. Nevertheless, the perforator was insinuated along the fingers; but, on pushing forward the instrument, the head instantly yielded before it, after which no part of the child could be felt. All attempts to deliver were then laid aside.

From this period she vomited constantly  
every

every thing that she swallowed ; her pulse remained exceedingly frequent and feeble, and she complained of great uneasiness over the abdomen. In the afternoon, about half an English point of urine was drawn off by the catheter.

As she continued unable to retain any thing on her stomach, although a variety of cordials was tried, an enema, composed of beef-tea, was directed to be given every two hours. No uterine pains returned ; but she complained much of soreness and a most uneasy sensation of fulness in the abdomen. She felt no disposition whatever to sleep ; she could not be persuaded to receive more than three beef-tea glysters, on account of the great uneasiness in her belly.

In this situation she remained during the whole night ; and, on the morning of April 1st, she appeared much in the same state. At ten o'clock, A. M. she passed naturally a little urine. From this time, what she vomited was of a dark green colour, resembling feculent matter. About two o'clock,

P. M. she passed by stool some of the same matter.

In the afternoon there was no alteration in the symptoms, except that she had a natural stool. Towards evening her extremities became cold; but her pulse still continued nearly the same as it had been for above thirty hours, namely, between 120 and 130, and very feeble.

At one o'clock, A. M. of the 2d, no pulse could be felt at the wrists; the uneasiness of the abdomen increased, and her respiration became hurried, so that her dissolution seemed approaching. At six o'clock, A. M. she grew somewhat easier, but there was still no pulsation at the wrists; her eyes continued lively, and she was perfectly sensible, as she had been all along. What she now vomited was of a brownish stercorous appearance.

At eight o'clock, A. M. she expressed a wish to eat a soft-boiled egg, which was accordingly given; almost the whole of it remained on her stomach. Within less than a quarter of an hour she cried out, that she  
felt

felt herself growing blind; and, in two or three minutes, expired so gradually and so easily, that the exact moment of her death could not be ascertained. During this change, the hands were kept applied to the abdomen, to feel if the child exhibited any symptoms of life; but no motion whatever was felt.

*Appearance on Dissection.*

A very putrid smell issued from the body, which was opened thirteen hours after death.

*Externally.*—The abdomen was very much swelled, and, in the region of the umbilicus, a circumscribed elastic tumefaction appeared.

*Abdomen.*—On cutting into the abdomen, the swelling at the umbilicus was found to proceed from a quantity of air effused into the abdomen at that part. Immediately under the abdominal parietes, a considerable

considerable quantity of extravasated blood appeared covering the anterior surface of the intestines. This was found to have proceeded from the uterus, which was ruptured at the left side. The rupture was in a longitudinal direction, was seated in the cervix, and extended apparently about four inches. The uterus itself was contracted so much, that its length did not exceed six and a half inches, nor its breadth five and a half. In the left side of the belly, the foetus appeared surrounded by intestines. It was completely enveloped in its membranes. These were every where in close contact with its body, which was placed in such a position as to occupy the least possible space. The lobulated surface of the placenta formed on the right side of the foetus the external surface of the bag in which it was included. On opening the membranes, no liquor amnii was found. The child, which was a female, was in such a state of putridity, that the head was quite emphysematous, and the parietal bones were greatly separated from each other. One of  
its

its feet was turned inwards, and had been so much compressed, that it retained its position, forming a club foot. It appeared that the perforator had penetrated only the external lamella of that portion of the membranes which was in contact with the head.

The following were the dimensions of the pelvis : At the brim, from the centre of the sacrum to the most diverging point of the pubes,  $3\frac{1}{2}$  inches; from ditto to the part at which the pubes approximated,  $2\frac{1}{4}$  inches; from the sacrum to the linea innominata, at the top of the acetabulum,  $1\frac{5}{8}$ ; therefore the short diameter, at the brim, was, for the extent of an inch,  $2\frac{1}{4}$  inches, but in the remainder of the space only  $1\frac{5}{8}$ . At the outlet, the space between the tuberosities of the ischia was  $\frac{5}{8}$  of an inch. The spinous processes of the ischia were distant  $3\frac{1}{8}$ . The point of the coccyx, when drawn back, was distant from the junction of the ischia  $2\frac{1}{2}$  inches, and the same from the tuberosity of the ischium on the left side, but on the right side, it was half an inch less.

less. The depth of the pelvis, both anteriorly and posteriorly, was  $4\frac{1}{2}$  inches.



When the consultation was held, it appeared to be utterly impossible to open the head with safety, because the depth of the pelvis at the anterior part, together with the narrowness at the outlet, rendered it impossible to introduce two fingers of the left hand to guard and direct the points of the perforator; without which much danger must attend the use of that instrument.

As it seemed exceedingly problematical how far it was justifiable to destroy the child, while the chance of the woman surviving the operation was rendered doubtful, from the great resistance that would be experienced in making the extraction, another reason for waiting was to ascertain, by the effects of the uterine action, whether the child might not be of an unusually small size.

When the situation of the patient became almost hopeless, it was judged more prudent to attempt the delivery by embry-  
ulcia,

ilicia, than by the Cæsarian operation, because the head seemed a little lower than formerly, and no decisive evidence of the child being alive had occurred even for a day before labour commenced.

Although there was every probability that the uterus had burst, yet the pathognomonic symptoms being absent, precluded an absolute certainty of that event.

The appearances on dissection explained this circumstance, as the liquor amnii had been entirely absorbed, and the membranes enveloped very closely the whole of the child, so that its limbs, not being disengaged, could not be felt through the parietes of the abdomen.

It may, therefore, be concluded that, in some species of defective pelvis, although the apertures be such as to be capable of allowing the mangled child to be extracted through them, it is impossible to diminish the head sufficiently with safety, or, that being accomplished, the extraction would

would be productive of injury such as to cause death.

In confirmation of this latter proposition, it may be remarked, that where the operation of embryulcia has been performed, in cases of extreme deformity of the pelvis, it has most commonly been succeeded by the death of the woman ; for every such case where this event has not happened, may be regarded as an exception to the general rule.

This assertion may, perhaps, be controverted, and in opposition it may be stated, that an infinitely greater proportion of the women, on whom the operation in question is practised, recover entirely than die. The fact cannot be denied ; but it is presumed that it does not alter the state of the question ; for the operation of embryulcia is much more frequently performed, where there is only a slight deficiency of space, and even where the deficiency is temporary only, subsiding after the pressure is taken off by the contents of the head being discharged,

enlarged, than where the capacity of the os uterini is extremely diminished.

*Secondly.* That women, in whom the os uterini is so deficient as to be incapable of admitting the extraction of the infant by the operation of embryulcia, can become pregnant, has been called in question by DR BARNES; and yet in the history of two cases, where the Cæsarian operation was performed in London, the most unequivocal testimony of the fact is afforded. The pelvis of the one woman, viz. of her whose case is related by DR COOPER and MR THOMSON, in the 4th vol. of the London Medical Essays and Inquiries, measured only  $\frac{7}{8}$  of an inch from the projecting part of the sacrum to the opposite symphysis pubis. In the pelvis of the other, whose case is detailed by DR COOPER in the 5th vol. of the same Essays, the greatest extent of the short diameter at the brim did not exceed  $1\frac{1}{4}$ , and, on each side of the sacrum, the space gradually became much narrower, till it terminated in a small point.

In a pelvis in my possession, being that of

a woman on whom DR YOUNG, late Professor of Midwifery in this University, performed the Cæsarian operation, the short diameter at the brim does not measure above  $1\frac{3}{4}$  inches at one side; the bones of the pubes are bent, and refuse admittance to a finger at the arch; the sacrum is convex anteriorly; the anchylosed coccyx is unciform, and the distance from it to the tuberosities of the ischia is somewhat less than  $1\frac{3}{4}$  inches.

The construction of the pelvis in the woman on whom Dr James Hamilton, jun. lately performed the Cæsarian operation, was still more unfavourable. The brim formed nearly a triangular figure, in consequence of the pubes at their junction with the ilium on each side projecting forwards so much that the angles, constituting the junctions, were distant only  $\frac{6}{8}$  of an inch. The following were the dimensions at the brim.

From sacrum to pubes, at the most diverging point,  $3\frac{1}{2}$  inches; to the angle formed by the pubes at the left side,  $1\frac{6}{8}$ ; at the right side,  $2\frac{1}{8}$ .—Distance between the angles,

es, formed by the pubis,  $\frac{6}{8}$ .—From the  
 anterior to the anterior part, on the left  
 side, at half an inch from the angle form-  
 ed by the pubes, the distance was  $1\frac{5}{8}$ ; at  
 an inch,  $1\frac{1}{4}$ ; and at an inch and an half,  
 $1\frac{3}{4}$ .—On the right side, at half an inch  
 from the angle formed by the pubes, it was  
 at an inch,  $1\frac{6}{8}$ ; and at an inch and an  
 half,  $1\frac{7}{8}$ ;—The long or transverse diameter  
 was  $4\frac{1}{4}$ .—The distance between the inner  
 edges of the thigh sockets was  $2\frac{7}{8}$ .

From the point of the coccyx to the  
 middle of the tuberosity of the ischium on  
 the left side,  $2\frac{3}{8}$  inches; on the right side,

From the same point to the centre of  
 the arch of the pubis,  $4\frac{1}{4}$ .—Distance be-  
 tween the tuberosities of the ischia at the  
 middle, 2.—Distance between the rami of  
 the ischia, at their greatest approximation,  $\frac{1}{2}$ .

The depth of the cavity was anteriorly  
 3 inches; and posteriorly 5 inches.

Since, therefore, there can be no doubt  
 that, in some cases, the apertures of the pel-  
 vis are not sufficient to allow the extraction  
 of the child by the operation of embryul-

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cia,

cia, and that women, with such conformations of pelvis, are capable of becoming pregnant, it is obvious that the Cæsarian section is not an operation of choice, but of absolute necessity ; for it is the duty of the practitioner to endeavour to save at least one life.

Although few practitioners will agree with DR OSBORN, that the child in utero is destitute of the power of feeling, yet a principle laid down by him will not, it is apprehended, be controverted, viz. that where it is absolutely impossible to employ such means as shall save both infant and mother, the life of the former ought to be sacrificed to the more valuable one of the latter. But, in the cases under consideration, the sacrifice of the child cannot be beneficial to the parent, and consequently, unless the Cæsarian operation be performed, both lives must be lost.

For these reasons, this operation would be justifiable, even although the opinion of some respectable practitioners, that wounds in the uterus invariably prove fatal, were well

well

well founded. This idea, however, is merely prejudice; for there can be no doubt that women have survived not only lacerations of the uterus but also the Cæfarian operation.

That the success of this operation has been greatly exaggerated must be confessed; but it is not to be inferred from thence that in no case has the event been fortunate, because the contrary can be proved by the most unquestionable evidence.

Thus, notwithstanding the declamation of some eminent authors, the Cæfarian operation cannot be entirely banished from practice. Did cases requiring it occur frequently, the duty of a practitioner of midwifery would be disagreeable beyond measure. But it fortunately happens, that such cases are exceedingly rare; and that one may practise for a vast number of years, even in a very populous neighbourhood, without meeting with a patient whose pelvis is so much deformed.

Having established the general principle that this operation is on some occasions ab-

folutely inevitable, it would be useful if we could ascertain the precise circumstances under which it ought to be had recourse to; but the species of deformity of the pelvis are so exceedingly numerous and various, that it would lead to discussions inconsistent with the nature of this work to enumerate them.

Where the dimensions of the pelvis absolutely prevent the possibility of extracting the infant, by the operation of embryotomy, there can be no doubt, as already stated, that the Cæsarian operation is indispensable; but it may be questioned, whether, in those degrees of deformity which barely render the extraction of the mangled child practicable by a very skilful operator, the patient could survive the violence produced by the means employed.

It may be proper perhaps to state the general result of this operation in Great Britain, in order to inculcate the necessity of never having recourse to it except from a conviction of the utter impossibility of  
otherwise

otherwise saving one of the two lives committed to our charge.

In Great Britain, the operation has never yet proved successful in saving the life of the mother, although it has been performed thirteen or fourteen times. In Edinburgh it has been six times had recourse to, viz. twice by DR YOUNG, once by MR R. SMITH, once by MR ALEXANDER WOOD, and once by MR CHALMER, surgeons, and once by DR JAMES HAMILTON, junior.

As the histories of the operation, hitherto on record, do not appear to me to contain the ample information which would be required by one compelled to perform it, I have inserted the cases of the patients on whom my late friend MR CHALMER and my son, DR JAMES HAMILTON, junior, operated. The former has been already detailed in the other editions of this work.

#### CASE FIRST.

ELIZABETH CLERK, aged thirty, had  
T 3 been

been married for several years, became pregnant, and miscarried in the third month; the expulsion of the abortion occasioned so severe a stress, as actually to lacerate the perinæum. Some time after her recovery, she was irregular; afterwards had one show of the menses; again conceived; and the child, as she imagined, arrived at full time. She was attacked, on Monday the 3d January 1774, about midnight, with labour-pains; which went on slowly, gradually increasing till Saturday the 15th, when she was brought from the country to the Royal Infirmary here. Upon examination, the pelvis seemed considerably distorted; but the body was otherwise well shaped, though of small size. The os externum vaginæ was entirely shut up; nor could any vestige of vagina be observed, nor any appearance of labia pudendorum: instead of these, there was a small aperture at the superior part of the vulva, immediately under the mons veneris, probably about the middle interior part of the symphysis pubis. This aperture (which had a small process

process on the superior part, somewhat resembling the clitoris) was no larger than just to allow the introduction of a finger; the meatus urinarius lay concealed within it. A consultation of Surgeons was called, and the Cæsarian section was determined on. Having had no stool, nor voided any urine for two days, an injection was attempted to be thrown up; but it did not pass, nor was it possible to push the female catheter into the bladder. At six in the evening, the operator made an incision on the left side of the abdomen in the ordinary way, through the integuments, till the peritonæum was exposed: two small arteries sprung, which were soon stopped by a slight compression: the wound was then continued through the peritonæum into the cavity of the abdomen; when the bladder appeared slightly inflamed, and much distended, reaching with its fundus near as far as the scrobiculus cordis. Another unsuccessful attempt was made to pass the female catheter: at length a male catheter was procured, which was, after some difficulty, introduced

ced into the bladder ; and the urine evacuated to the quantity of above four pounds, high smelled and fetid. This occasioned a necessary interruption, for a few minutes, between making the opening into the abdomen and uterus : the bladder collapsing, the uterus, which before lay concealed, now came in view ; through which an incision was made, and a stout male child was extracted alive, followed immediately by the secundines. The uterus contracted rapidly. After cleansing the wound, the lips were brought together by the quill-suture, and dressed superficially. The patient supported the operation with surprising courage and resolution ; and no more than five or six ounces of blood were lost on the occasion.

Being laid in bed, she complained of sickness, and had a slight fit of vomiting ; but, by means of an anodyne, these symptoms soon abated. She was affected with universal coldness over her body ; which also abated, on the application of warm irons to the feet. She then became easy,  
and

and slept for four or five hours. Next morning, the 16th, about two o'clock, she complained of considerable pain in the opposite side: for which she was bled, and an injection was given, but without effect; for the pain increased, stretching from the right side to the scrobiculus cordis; nor did fomentations seem to relieve her; her pulse became frequent, she was hot, and complained of thirst. At 7 A. M. the injection was repeated, but with no better success, and eight ounces more of blood were taken from the arm. A third injection still failed to evacuate any feces; the thirst increased; and the pulse rose to 128 strokes in a minute. At 11 A. M. the pulse became fuller, and the respiration much oppressed. No stool nor urine passed since the operation. At 12 she was bled again, when the sickness appeared less than formerly. She now took a solution of sal Glauberi, manna, and cr. tart. at short intervals;

*N. B.* From the inaccuracy of the Clerk of the Infirmary, from whom the outlines of the case were received, an extraordinary bleeding, mentioned in the Elements of Midwifery, was related by mistake.

intervals; she vomited a little after the last dose; had a soft stool, and voided a small quantity of urine. At 3 P. M. her pulse was 136; and she had another stool, when thin fæces were evacuated: she was then ordered two spoonsful of a cordial anodyne mixture every second hour. The vomiting now abated; the pulse became smaller and more frequent: she passed urine freely; but the pain and oppressed breathing increased. At 7 P. M. her pulse rose to 142, and became weak and fluttering; she called for bread, and swallowed a little with some difficulty; her thirst was intense; the dyspnoea still increased. She was now much oppressed, began to toss; the pulse sunk, and became imperceptible: she complained of faintishness; but on belching wind, her breathing was relieved, and the pulse returned, growing fuller and stronger. The pain of the side still increased; two glysters of warm water with oil were then injected without effect. At 8 P. M. the pulse became less frequent and smaller; she complained much of the pain towards the scrobiculus

viculus cordis ; her breathing was much oppressed ; her belly was tense, and swelled as big as before the operation ; her pulse was now small and feeble ; she looked ghastly, and expired a little after eight, twenty-six hours after the operation.

It is to be regretted that the relations would not permit the body to be opened.

### CASE SECOND.

JEAN DOUGLASS, aged 34 years, having, according to her own account, arrived at the full period of utero gestation, became in labour at 8 o'clock A. M. of June 27. 1795, after having been for three preceding nights so much distressed with spurious pains as to be totally deprived of sleep. Soon after the commencement of labour she had a natural stool.

The uterine pains continued to recur during the course of the day, at short, though irregular, intervals, till midnight, when the membranes spontaneously gave, way,

way, and a quantity of liquor amnii was discharged.

From about this period she was attended by an experienced midwife, who having found, that notwithstanding very frequent, strong, and forcing pains, no part of the child whatever could be felt, sent for extraordinary assistance at 9 o'clock P. M. of June 28.

At that time the labour throes continued to be strong and frequent. The patient seemed much exhausted; her abdomen was exceedingly tense and painful to the touch; and her pulse small and about 112. She had lately had a shivering fit, which lasted for a considerable time. She had no suppression of urine. Meconium was observed on the cloths after every pain. On introducing two fingers, for the purpose of ascertaining the progress of labour, she complained very much of pain in the parts. As the pelvis appeared greatly deformed, particular care was taken to ascertain its dimensions accurately. It was found that the outlet was so exceedingly deficient in space, as to prevent the introduction of  
more

more than two fingers; and, at the same time, the tuberosities and the rami of the ischia approximated so much as to render the pelvis very deep anteriorly, so that it seemed almost impracticable to measure, with any precision, the dimensions at the brim. At last, however, with excessive difficulty, and not without occasioning considerable pain, the fingers were carried as high as the linea innominata. The os tin-  
cæ was felt in the centre of the brim, capable of admitting easily the introduction of one finger but not of two, and apparently as much dilated as the state of the pelvis would permit. The brim seemed of a triangular form, from the approximation of the pubes towards their junction with the ilia. On the left side, it was evidently incapable of admitting the passage of more than one finger; but on the right side, the deficiency was not so considerable. The soft parts lining the pubis were obviously swelled. No part of the child could be felt, although the pains were strong.

The previous history of the patient being

ing now inquired into, the following particulars were learned.

She had been about twelve years married, for some time had enjoyed uninterrupted good health, and during that period had born, without any uncommon difficulty, three living children. But while nursing the third child, she was affected with rheumatic pains, in consequence of which she was for many months confined to bed. Having at last recovered her strength so far as to be able to rise, she continued for a long time lame, being forced to make use of a staff to support herself in walking. In this state of health, she again conceived, and carried the child to the full time. Her labour was preternatural, and she was delivered with such difficulty, that the continued exertions, for many hours, of two country practitioners were, according to her account, employed before the delivery was accomplished. The infant was still born. Her recovery was exceedingly tedious, for she was confined to bed above  
three

three months, during which time the rheumatic pains distressed her very much.

At the distance of about twelve months, from this period, she became pregnant of the child she now carries. During the early months of gestation, she was much indisposed, but after quickening, she felt herself considerably better, which she imputes to the use of certain pills received from an empiric.

Having been much subject to the heart-burn, she was advised to swallow common chalk, which has now become a habit, so that for these six years she has swallowed, on an average, half a pound of chalk weekly.

Her stature does not seem much diminished, nor is her look very unhealthy, although her complexion is fallow.

Having been persuaded to accept of an apartment in the Edinburgh General Lying-in Hospital, she was brought into it about half past 10 o'clock P. M. of June 28.

Immediately on her admission, she took a draught containing 30 drops of tinct. opii.  
and

and an enema composed of mucilage of starch, with 80 drops of the same, was exhibited. It had been learned, that about three hours before she had taken 35 drops of that medicine.

The uterine pains having soon after this ceased, she laid herself for rest.

At 1 o'clock A. M. of the 29th, she was interrupted from a state of sleep, in which she had been for a little time, by a violent fit of shivering that continued for nearly an hour, but was not succeeded by any considerable degree of heat. After this, she fell quiet, but was again disturbed by another fit of shivering about a quarter before four o'clock A. M. which did not last so long as the former, and, like it, was not followed by excessive heat.

From this time she continued to slumber till about 8 o'clock A. M. when she expressed a desire to have some food. She took some tea and bread for breakfast.

At 9 o'clock, the rigors again recurred, but were of short duration.

At

At 10 o'clock A. M. a consultation was held. The state of the pelvis was then again carefully examined, and every circumstance of the case was taken into mature consideration. The result of this was a conviction that the dimensions of the pelvis were such as to render it impracticable to extract the child through that cavity, even although it were within reach, which it was not found to be, and that there was no other resource than the Cæsarion section.

Some time elapsed before the consent of the patient and her friends could be obtained. During that period, a common laxative enema was exhibited, but it was discharged without having occasioned a stool. As a quantity of urine was passed along with the enema, the use of the catheter was not required.

At a quarter past two o'clock P. M. the operation was begun. The patient was placed in bed half sitting and half lying, with an assistant supporting her back, as the tension of the belly impeded her respiration so much that she could not lie in the horizontal

horizontal posture. On the right side of the abdomen, about two inches above, and an inch and an half to the side of the umbilicus, an incision was made extending downwards in a straight line for the space of six inches. The knife, a common convex edged scalpel, was carried nearly at once down to the peritonæum. No apparent muscular fibres intervened except towards the inferior extremity of the wound, and no active arterial branch was cut through. The peritonæum being then divided by means of a probe-pointed bistory, the uterus came into view. While an assistant on each side held down the parietes of the abdomen, a small opening was made into the uterus at the upper part, into which the fore-finger of the left hand, and the probe-pointed bistory were introduced, and the wound in the uterus was thereby enlarged to the extent of that in the abdomen. A quantity of liquor amnii was immediately discharged, and then the edge of the placenta and the right side of the infant, its elbow being at the superior part of the wound, were seen

seen to present at the opening. This position of the child, together with its large size, rendered its extraction difficult, but at last one foot having been taken hold of, the whole uterine contents were removed; the placenta and membrane following instantly the body of the child. The hand was immediately introduced through the opening into the uterus, and a coagulum of blood, which was found to plug up the os tincæ, was pushed down. Before any attempts were made to close the external wound, the uterus was allowed to contract as much as possible, during which period about a pound and an half of blood were discharged. The divided partietes of the abdomen were then brought together, by means of the interrupted suture and of adhesive plasters. Five ligatures were required. As the lower portion of the omentum was forced out at the upper part of the wound, a doffel of charpee was insinuated between the teguments and the ligatures of the upper stitches. A portion of the intestinal canal, which was protruded

ded at the lower part of the opening, was easily reduced, and was kept so without any difficulty. The wound was now covered with lint, and a gentle degree of compression was made on the abdomen, by means of a broad bandage. During the operation, which was completed within a few minutes, the patient made no complaint whatever.

As the cuticle was peeling off, and it was obviously in a putrid state, no attempts were made to restore life to the infant, which was of the male sex, well formed, and weighed lb. vijs. A conical tumour was observed on its head, which had been evidently formed by the action of the uterus forcing it against the brim of the pelvis.

#### *AFTER-TREATMENT.*

*June 29th.* Immediately after the operation deliquium took place. From this she recovered gradually, and then swallowed a little wine and water, some of which  
she

She had also taken previous to the operation. Soon after this she became affected with shivering, which continued for a quarter of an hour.

*Three o'clock P. M.* Feels herself now easy; and says that she suffers much less than she did after her last delivery. Pulse 120 and soft: tongue clean: skin of the natural temperature: appearance of the countenance favourable.

Capt. Stat. Tinct. Opii. gtt. xxx.

*Five o'clock P. M.* Has continued in the same state since the preceding report. Has taken a good deal of wine and water and of beef tea, in small quantities at a time, but complains of a trifling degree of heartburn, which she attributes to the wine.

R. Spt. Ammon. Arom. ʒi

Sacch: Alb. ʒij

Aq. Callid. ʒviij. M.

Capt. hujus et Juris bovini alternis vicibus ʒi omni sem̃i hora.

*Nine o'clock P. M.* Continues nearly in the same state, except that she complains of a smarting sensation of pain in the wound. Has taken regularly the beef tea and the cordial as directed. Made water naturally about six o'clock P. M. Has little or no discharge from the parts.

Capt. Stat. opii puri gr. iſs.  
Cont. Remed. Cætera.

*Midnight.* No alteration in any respect has taken place, but has had no sleep since the operation, and seems at present to have very little disposition to that state.

Foveantur Statim Pedes more solito per  
semi horæ spatium.

*June 30. Half past one o'clock A. M.* Has for about half an hour complained much of pain throughout the belly, which, together with uneasiness in breathing, oppresses her so much that she moans constantly. Has a small degree of nausea, attended with a disposition to belch, in attempting which she has two or three times  
spouted

spouted out a mouthful of a dark green coloured fluid. She appears also to talk somewhat incoherently, and is so restless that she first turned herself on the wounded side, then sat erect, and is now with great difficulty persuaded to lie in the proper posture. Pulse 148, and more feeble than at last report.

R. Fol. Nicotian. 3ij  
 Aq. Bullient. 3xij  
 Infund. per spat. viginti minut. dein  
 Colat. ft. Enem. Statim injiciend.

*Half past two o'clock A.M.* For a few minutes after the exhibition of the enema, she was exceedingly languid, and her pulse grew so quick and small that it could not be numbered. From this state she gradually recovered, so that now her pulse is 120 and firm, her breathing easy, the pain in the abdomen has ceased, she no longer moans, nor talks incoherently, and she seems much inclined to sleep. A little discharge appears from the vagina. During the state of languor, she twice took a small tea spoon-

ful of spt. ammon. arom. in a cup of warm water in which a little sugar was dissolved.

*Six o'clock A. M.* Slept soundly for half an hour after last report; then passed the enema, and at the same time a quantity of urine, but no fæces. At half past four o'clock A. M. she relapsed into nearly her former languid state, her pulse becoming again quick and small. From this she gradually recovered, the spt. ammon. arom. diluted having been twice repeated. From that period, she has continued pretty easy, and has slumbered much. Pulse 116, and soft; tongue pretty clean; skin natural, or nearly so.

*Nine o'clock A. M.* Having expressed a wish for breakfast, she drank some tea, and ate two considerable portions of thin sliced toasted bread, holding the bread in her hand. A little after this, she made water naturally, and it was found that there had been a considerable discharge per vaginum.

*Eleven*

*Eleven o'clock A. M.* It having been found necessary to shift her bed and body linens, that process was conducted with great caution about ten o'clock. She did not complain of having suffered any fatigue in consequence, and expressed herself to be in a much more comfortable situation than before. Although she still feels a painful sensation in the wound, yet she thinks herself, on the whole, pretty easy : Pulse 112, soft, and regular in the pulsations : tongue clean : has no thirst : skin natural.

*Two o'clock P. M.* Having complained of heartburn about mid-day, she had a tea spoonful of magnesia mixed with water, after which she continued in the same state as at last report, till within this half hour that she has become exceedingly uneasy from pain in the abdomen ; her breathing is affected as in the morning ; her pulse is irregular and quick ; and she expresses a great desire to sit in the erect posture, or to turn on the wounded side.

Repet. Statim. Enem. ex Infus. Nicotian.

*Five*

*Five o'clock P. M.* Immediately after the exhibition of the enema, she insisted upon being raised up, in order to pass water, but nothing else than the enema was discharged. On lying down, she said that she was faintish, and that she should not again, for some time, desire to sit up. She then complained of nausea; and, while attempting to swallow some of her cordial mixture, she ejected, without any retching, a considerable quantity of brownish coloured fluid; immediately after which she became suddenly delirious, and has continued ever since to be quite unmanageable.

Adhibeatur statim. Tinct. Op. gtt. xl.

*Seven o'clock P. M.* Advantage was taken of an interval of calmness that occurred about half an hour after last report, to examine the state of the wound. The dressings (which emitted a most disagreeable fetor) having been removed, the lower part of the wound appeared black; and under the parietes of the abdomen, from the  
second

second lower stitch, for about three inches towards the side, a crepitation was distinctly perceived; an emollient poultice was now laid over the wound.

*Half past nine o'clock P. M.* Soon after last report, her pulse became imperceptible; coldness of the extremities took place; and a clammy sweat broke out on the neck and breast. In this situation she continued, being sometimes outrageously delirious and sometimes quite calm, till a quarter past nine o'clock P. M. when she expired, almost without a struggle.

*Appearances on Dissection.*

The body was opened about twenty-four hours after death.

*Externally.*—The abdomen was considerably tumefied.

*Abdomen.*—The belly having been opened in the usual manner, the first circumstance

stance that appeared was the lower edge of the omentum protruded without the lips of the wound, between the third and fourth stitches. The omentum itself, although not strictly in the natural state, did not seem materially altered. On its being removed, two or three coagula of blood, the weight of which could not exceed three ounces, were observed on the outside of the intestines. The stomach, much distended, came next into view; it contained little else than air, and seemed to have occasioned the tumefaction of the belly. Pretty broad patches, of a florid red colour, on the external surface of the intestines, contiguous to the wound, indicated a slight superficial inflammation of these parts. In the colon, a considerable quantity of hardened faeces was found. The uterus was not so much contracted as might have been expected, seeing that it measured in length nine inches. Although quite flabby, in consequence of which the edges of the wound in its parietes were not in close contact, no effusion had taken place from it into the cavity of the abdomen,

abdomen, unless the coagula, already mentioned, be regarded as such. The divided portion lay about three inches to the left side of the abdominal wound. The substance of the uterus had the natural colour, except at the anterior part, where its external surface was of a somewhat darker colour than usual. The urinary bladder was quite found. It occupied the angle formed by the projection of the pubes, at the brim of the pelvis. The parietes of the abdomen were found, both externally and internally, except for a space extending, in one direction, from the second lowest stitch to the linea innominata, and, in the other, from an inch and an half on the left side to three inches on the right side of the wound. That portion was livid both on its external and internal surface. It was thickened, particularly at the lower part, and contained an effused fluid, similar to that seen in gangrenous parts of the same structure. The edges of the wound exhibited no marks of the adhesive inflammation.

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The dimensions of the pelvis have been already stated.

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For the reasons already offered, the conduct of the practitioner, in determining on this operation, is not to be directed by the general event of the cases in which it has been had recourse to in this country. That consideration ought only to influence him so far as to prevent his deciding on the necessity of the operation, until he has weighed deliberately every circumstance of the case.

With respect to the method of performing the operation, various proposals have been suggested. To the author of this work, the method directed by DR MONRO seems the best; and, therefore, in the former editions of this work, he inserted the following account, with which he was favoured by the DOCTOR himself.

“WE ought strictly to examine the state of the bones and of the soft parts, lest we imagine that the bones prevent the delivery, when, perhaps, the soft parts only may be  
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in the fault. We may also presume, that there is a sufficient wideness in the bones of the pelvis, if the patient is not observed to have deformity in the other parts of the body; as a deformity rarely occurs in the pelvis without rickets or a curvature in the spine, though, in a few cases, this may happen. But after all these circumstances have been attended to, and the operation is determined, next let us consider the proper steps to be taken in it.

“ We first empty the intestines, the rectum, and vesica urinaria, that the patient may not be disturbed soon after the operation, and that the size of the bladder may not interrupt it. We then lay the patient in a horizontal posture, that the intestines be not pushed down between the abdominal intestines and uterus. In making the incision, we must avoid the large arteries in the containing parts. If it were to be extended far outwards, considerable branches of the circumflex might be divided; if inwards, the epigastric: so the best place is between the recti muscles, or upon the outside of the rectus.

rectus. The last place is most frequently preferred, and we there readily get into the uterus. By this means, indeed, the uterus must be divided towards its side, where the vessels enter and are most considerable; but we choose the outside of the rectus, because of the vesica urinaria being in danger of contracting inflammation from the incision. Except the danger of wounding the small turns of the intestines, there is no great difficulty in performing the operation; yet several cautions are to be observed. Operators have not been aware of the causes of the danger; and we have more favourable accounts of the operation than we ought to have. We shall find in practice, that we shall be more frequently disappointed than we would imagine from the reports of authors, who have only mentioned the fortunate cases. In this city, the operation has been performed five times, and always without success; though some of the women, before the operation, were in ordinary health. The great danger, I am persuaded, arises from the admission of the air, as well as  
from

from the parts divided; and I have repeatedly found, in making experiments upon animals, that if the air were let in upon the abdominal bowels for a few minutes, without any farther injury, the animal often dies, and always recovers with the utmost difficulty: And this still more readily happens, if a considerable quantity of red blood be extravasated within the cavity, which produces a most violent inflammation. Therefore the surgeon is not to go at once into the cavity of the abdomen; but should first divide the skin and muscles, and leave the peritonæum entire, until the bleeding from the vessels has entirely ceased: the danger in that way, I find, is very much lessened. We then open the peritonæum, making first a small incision, and observe if the uterus is contiguous; if it is, we divide it with caution; and the assistant, by making a moderate pressure, hinders the air from getting into the general cavity of the abdomen. The discharge of blood from the uterus is smaller than we would expect. We then cut the membranes, separate the placenta to extract

the fœtus, discharge the waters ; and, as soon as the fœtus and secundines are removed, the uterus contracts of itself. Then let the surgeon pass his hand into the cavity of the uterus, and, with one or two fingers, open the os uteri, that the blood, naturally discharging into the cavity of the uterus from the wound, may pass readily out by the vagina. We then shut the wound ; and, instead of leaving an opening for the discharge of matter, we trust to absorption ; for I constantly find, that a very close future contributes to the cure : so I would sew the containing parts of the abdomen with the glover's stitch, or interrupted futures at  $\frac{3}{4}$ ths of an inch distance, making the needles pass through the skin and part of the muscles, but not within the cavity, leaving the peritonæum entire ; or, if there is a considerable effusion of blood and water, let us stitch all but the under part, introduce into it a soft tent, and cover the whole with a compress. The patient is to be kept on a strict antiphlogistic regimen during the cure."

§ 3. *Of the Division of the Symphysis Pubis.*

M. SIGAULT is entitled to the honour of having first proposed, and successfully performed, this operation. M. LE ROY, however, one of the most eminent teachers and practitioners of midwifery in France, who divided the honour with M. SIGAULT, deserves also to be here mentioned. He was presented, at the same time, with a medal from the Faculty of Paris; introduced, along with M. SIGAULT, to the king; assisted personally at the operation; and first published an account of it.

But although the success of a few cases shows, that the articulation at the cartilaginous *symphysis pubis* is capable of division, by incision, with safety to the patient, tearing the bones forcibly asunder by violent extension of the thighs, till they are so widely separated as to procure a considerable increase in the dimensions of the pelvis, must be a precarious and hazardous operation; precarious, in affording sufficient

space to admit of the extraction of a living child, where the pelvis is considerably contracted from distortion ; and hazardous, in its consequences to the mother, where much force has been employed, either to obtain a separation of the bones, or afterwards to accomplish the delivery, where there is considerable resistance to the extraction of the foetus.

This is sufficiently proved from the event of several cases, particularly of two histories related in an inaugural dissertation by DR BENTLY \*, where this operation was performed on the living body ; the one by PROFESSOR SIEBOLD, of the University of Wurtzburg, in February 1778, the other by DR. GUERARD, professor of anatomy at Dusseldorpe, in May following.

In the former, little space, not more than a finger's breadth, after the utmost force that could be safely applied, was procured ; and a dead child was with difficulty extracted. Fever ensued after the operation, urine  
for

\* Published at Strasburg, 1779. See Edinburgh Medical Commentaries, Part iii. for the year 1780.

for several weeks passed by the wound; the bones exfoliated; and the patient recovered with difficulty.

In the latter case, though the bones of the pubes were separated fully an inch and a half from one another, the advantage obtained by it was so immaterial, that the child was with difficulty extracted piece-meal; the consequence was, that, notwithstanding every possible care and attention, the violence employed in forcing the bones was fatal to the woman, who “was so much reduced” and spent, that she died the 10th day after the operation.”

It has been successfully practised, however, since SIGAULT’s operation, in different parts of France, by M. DESPRES, accoucheur in Brittany, M. GAMBON at Mons, in several instances \*. M. NOGEL, chirurgien accoucheur †, and others; once

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in

\* Recherches Historiques, &c. sur la Section de la Symphyse du Pubes. Par M. Alphonse le Roy, &c. Paris, 8vo, 1780.

† Anatomie des Parties de la Generation, &c. Seconde edition. Augmentée de la Coupe de la Symphyse.

in Spain, and once and again in Holland. But it has repeatedly failed in the object of saving the child, and has been fatal to the mother; the bladder has been often wounded; incurable emission of urine, and other dreadful accidents, have followed.

We may therefore conclude, that altho', under certain circumstances, the division of the ossa pubis, by incision at the symphysis, may be practicable and safe, the separation by extension is uncertain and hazardous. It might, perhaps, in some *rare instances*, be the means of preserving a child, who would otherwise be the victim of the operation of embryulcia; but as the advantage derived from it, by augmenting the transverse diameter of the pelvis at the superior aperture, is trifling, it can seldom be successfully performed, with respect to the child, where the distortion is so considerable as to destroy the capacity of the basin, and render delivery by the scissars and crotchet necessary; a method which will always obtain the preference in every well-regulated state, and with every

Par M. Gautier Dagoty, Pere, anatomiste pensioné du Roi. A Paris 1778.

every humane practitioner, if the Sigaultian operation exposes the life of the more valuable parent to danger.

The operation consists in making an incision with a scalpel through the common integuments and soft parts, in the direction of the commissure of the ossa pubis. The articulation at the cartilaginous symphysis must afterwards be divided by the same instrument. The knees of the patient are to be kept gently separate by an assistant. A catheter is directed to be introduced, to prevent the accident of wounding the bladder in the operation; and we are advised, for the same reason, to make the incision, both of the soft parts and cartilages, a little towards the left side. The distraction of the bones is afterwards to be attempted, as far as is necessary or practicable, by a cautious and gradual extension of the thighs.

The operation being finished, the contractile efforts of the uterus are to be waited for to expel the child. The patient is afterwards to be confined to bed for several weeks, a bandage to be applied round the

loins, and the management directed on general principles. But if the natural pains should then fail, the scissars and crotchet must be used; the child must be turned; or the Cæsarian section had recourse to.

The first proposition, by destroying the child, disappoints the original intention of the operation. For, if the mother could be delivered by the crotchet with safety, at the expence of destroying the child, that method will always be preferable to a precarious attempt to save the child, at the hazard of the mother's life. If the pain and danger she suffers in the new operation, is not to be compensated by a moral probability of saving the child, the operation is then *entirely useless*. And again, if it should fail to enlarge the dimensions of the pelvis, and embryulcia be afterwards necessary, the mother, in that event, is wantonly exposed to the increased danger arising from both operations combined, with the additional hazard from the violence of mechanical force employed to extract the child, after the parts which suffer in the first operation have been

been wounded, and the bones torn from each other.

The great stress applied to the nervous aponeurotic parts, at the sacro-iliac symphysis posteriorly, may of itself also be fatal to the patient, or prove the cause of incurable lameness, independent of the other accidents incident to the operation.

With all deference to an authority which is universally respected, and which in few instances has been called in question, we must beg leave to differ in opinion from DR HUNTER, whose sentiments on this subject, though in general unfavourable to the operation, incline him to suggest, “ that the crotchet may be employed with safety to the mother when it fails.”

The second method, of attempting delivery by *turning*, with a view to save the child if the natural pains should be insufficient to protrude the head, after the bones of the pubes have been divided by SIGAULT's operation, although we are informed it has been successfully practised in one or more cases on the Continent, is a  
most

most dangerous expedient to the mother. The prospect it affords for the safety of the child, in a narrow pelvis, is too remote to encourage an experienced practitioner, who knows the difficulties that often attend turning in more favourable circumstances, to engage in this troublesome task. Such a proposition in this country would be rejected with contempt by the generality of practitioners.

The *Cæsarian section* is the third method proposed for accomplishing delivery with safety to the child, the section of the pubes having failed, if the child cannot be easily extracted by the crotchet. It hath actually been practised in a single instance, under the circumstances just now mentioned. It is needless to add, that the unhappy patient soon after died. A recovery, under such complicated sufferings, would have been almost miraculous; and few practitioners will be hardy enough, if their misguided judgement were permitted to rule, to venture a  
second

second time on an experiment so strictly desperate.

DR LEAK has considered the advantages and disadvantages of the Sigaultian operation; and seems to favour it in preference to the Cæsarian section; because the former “does not carry with it those ideas of cruelty which attend the latter, where the patient is, as it were, embowelled alive. No formidable apparatus is necessary, the section being made with expedition, and without pain and danger: no blood-vessel, nerve, or other parts essential to life, are wounded; those divided being only *cutis, cellular membrane*, and insensible cartilage, from which neither *hemorrhagy* nor *symptomatic fever* are to be apprehended\*.” He is therefore inclined to think, that with those “who are disposed to give this new operation a fair and judicious trial, as *it has already succeeded, it will again succeed.*” But though, in the body of a dead female subject in the  
Westminster

\* Dr Leak’s *Practical Observations on the Child-bed Fever, &c.* 5th edition, p. 255.

Westminster lying-in Hospital, the bones of the pubes after incision receded  $2\frac{1}{8}$  inches without much violence, it does not appear that any considerable acquisition of space in the dimensions of the pelvis was procured by it. I have had occasion to make the same experiment in repeated instances on the dead subject with no better success.

Upon the whole, therefore, from all the information we have yet received of the event of this new operation, we have little reason to adopt it in preference to the method of delivery by the crotchet, wherever that instrument can be used with safety to the mother ; and, as the space to be gained by it is as uncertain as the exact dimensions of the child's head before delivery, it would be rash and unwarrantable to adopt an expedient, precarious with respect to the child, and highly dangerous to the mother, in substitution of embryulcia ; which, if not too long delayed, may, in the present improved state of the art, be employed in most cases of distortion with *perfect safety* to the mother, who is always justly entitled to  
the

the first place in our intentions, and whose valuable life is the most interesting and important object of our regard \*.

## CHAP.

\* When this was written in 1783 the above contained our ideas on Sigault's operation. We can now add, that from the history of between 30 and 40 cases, where the division of the symphysis pubis was performed on the continent, and one case in Great Britain, we consider ourselves authorised to condemn that operation in every view, and to advise that it be had recourse to *in no case whatever*.

The world is much indebted to Dr Osborn for his accurate investigation of this subject; to which we with pleasure refer, and to which we think it unnecessary to add any remarks, as his sentiments on that occasion coincide perfectly with our own.—It is more than probable, that the almost universal rejection of this operation, by British practitioners, has been occasioned by the arguments contained in Dr Osborn's Essay.

## CHAP. III.

## PRETERNATURAL LABOURS.

**L**ABOURS are styled preternatural when any other part of the child than the head (or face) presents.

The causes of preternatural labours are obscure. The altered position has been attributed to the motions of the infant in the early months of gestation, and to accidental violent corporeal agitation of the mother at that period. It may also be influenced by the particular form of the child, by the quantity of liquor amnii, by the length of the cord, by the stretching of the uterus, by the shape of the pelvis, and by a variety of other circumstances.

We can sometimes discover that the child presents in an unfavourable position, even when the labour is but little advanced. We suspect it,

1<sup>st</sup>, If the pains be more weak and trifling than usual.

2<sup>dly</sup>, If the membranes be protruded in a long form, like a gut, or the finger of a glove.

3<sup>dly</sup>, If no part of the child can be felt when the orifice of the womb is considerably opened ; or,

4<sup>thly</sup>, If the presenting part, through the membranes, be smaller, feel lighter, and give less resistance, when touched, than the bulky heavy head.

It can with more certainty be ascertained after the membranes are ruptured, by feeling distinctly the presenting part. If the child's stools be passed with the waters, it is a sign, either that the breech presents, or that the child has been for some time dead ; though there are some exceptions to this rule.

Preternatural labours are difficult of delivery, or hazardous, from,

1<sup>st</sup>, The health and constitution of the  
an,

woman, and figure and dimensions of the pelvis.

*2dly*, The bulk of the child's body, and manner of presenting.

*3dly*, The time which has passed since the waters were evacuated ; for if that have been long, the womb is more strongly contracted, and the presenting part pushed on, and more firmly locked in the pelvis.

*4thly*, From a plurality of children ; from the chord falling down before the presenting part ; being entangled with its limbs ; or from profuse flooding.

The variety of preternatural position may be reduced to the following classes.

I. When one or both of the lower extremities present ; as one or both feet, knees, or the breech.

II. When the child lies cross the pelvis in a rounded or oval form, with the arm, shoulder, side, back, or belly, presenting.

III.



even in that position, a first child frequently loses its life.

We are often able to discern the presenting part long before the membranes break, and it is of great consequence to discover early how the child lies ; but, in making the necessary examination, care must be taken not to press the finger against the membranes in time of a pain. A hand is often mistaken for a foot ; but the latter may be readily distinguished from the former by a practitioner who examines leisurely and attentively what he feels.

*When one or both feet present in the passage,* little more ought to be done than if the labour were strictly natural, till the orifice of the womb be sufficiently dilated, and the presenting part advanced at or without the os externum. The woman must then be placed on her side, with the breech towards the edge of the bed, and her head obliquely to the opposite side.

When the parts are thus sufficiently open, or the feet, by the force of repeated pains, are

are at, or protruded without, the orifice of the vagina, the operator may then take hold, first of one leg, and, grasping it firmly above the ankle, gently endeavour to pull it down in the time of a pain, not in a straight line, but from side to side, or from pubes to sacrum : when the pain remits, a warm cloth is to be applied to the os externum, and the return of the pain should be waited for. The other leg is then to be taken hold of and pulled down in the same gradual gentle manner with the former : by pulling alternately, first by one foot, then by the other, there is less hazard of injuring the uterus, than if an attempt were made to bring down both feet at once ; and the passages, being thus gradually stretched, will be better prepared for the delivery of the bulky shoulders and head.

When the feet are sufficiently advanced for it, a warm cloth should be wrapped round them ; which will enable the operator to take a firmer hold, and defend the child from the hazard of injury by the extraction. But the cloth should be so ap-  
Y 2      plied,

plied, as to leave the toes exposed; for they are the proper direction for turning the body. If they already point towards one or other sacro-iliac synchondrosis, the child is to be brought along in the same direction, till it stops from the resistance of the shoulders. But if, instead of this direction, the toes should point to the back or belly, the child's body must be gradually turned, till the belly be applied to that sacro-iliac synchondrosis, to which it approaches nearest.

The proper time to begin to turn is a little before the breech advances to the os externum. The turn should not be made all at once, but gradually; the child's body must be firmly grasped with both hands, pushing a little upwards, then turning to one side in time of the pain, carefully observing and favouring that line of direction which the child naturally inclines to take. The attempt must be repeated during every pain, till the child's body be turned round, and the face applied as already directed.

When the breech is entirely protruded  
without

without the os externum, the child must be taken hold of by grasping firmly with the thumbs above the haunches, and the fingers spread over the groins; the extraction must be gradually performed, moving from side to side, pressing a little downwards towards the perinæum, and waiting for natural pains, or resting from time to time. As the belly advances, the operator must slide up his hand, or two fingers, and very gently draw down a little the umbilical cord, lest, being tense and overstretched, the circulation might be interrupted, and the life of the child destroyed, which often happens where this precaution is neglected.

After the breech is protruded, and the navel-string begins to be compressed, from the os tincæ grasping it like a ring, the delivery must be conducted with all the expedition that the mother's safety will admit of. When the child is advanced as far as the breast, its farther progress is prevented by the arms going up by the sides of the head. This obstacle must be removed

in this manner : The child's body ought to be supported by the one hand of the operator, which must be passed under its side, in such a manner that it may rest on the palm and arm of that hand ; the infant must then be drawn a little to one side, that two or more fingers of the other hand may be passed at the opposite side into the pelvis, over the back of the shoulder, as far as the elbow, to bring down the arm obliquely along the breast, gently bending it at the fore-arm, so as to favour the natural motions of the joint. Having then shifted hands, the other arm must be disengaged, and brought down in the same manner.

Both arms of the child being relieved, the woman may be allowed to rest a little till another pain or two follow ; when, by bearing down in the time of the pain, the head will generally be forced down and delivered. But if the woman be much exhausted, and the head does not quickly follow, the child will be lost from the pressure of the navel-string.

The pulsation of the arteries in the cord  
should

should regulate the time for extracting the head : while the pulsation is strong there is no hazard from delay ; if the pulsation be weak or languid, more especially if the cord begins to be cold and flaccid, the extraction must be quickly performed, otherwise the child will be destroyed.

The extraction of the head in preternatural labours is often the most difficult and dangerous part of the delivery. The cause of resistance, when it does not advance, is chiefly owing to its confinement between the sacrum and pubes, when the bulky part of the head is detained at the brim, or at the lower part by the chin catching on the sacro-sciatic ligaments. The method of delivery is to introduce two fingers of the left hand (which hand and arm at the same time must support the body of the child) into the mouth, and pull down the jaw towards the breast ; then applying the other hand with the fingers spread, so as to press down the shoulders, the operator must rise from his seat, and after having turned the face into the hollow of the sacrum, pull in

a direction from pubes to sacrum with considerable force, alternately raising and depressing the head, till it begins to yield, so that the chin being constantly pressed to the breast, the face will descend from the hollow of the sacrum: the delivery must then be finished, by bringing the hind-head from under the pubes with a half-round turn.

During these efforts, an assistant must be directed to press on the perinæum; and, whenever the circumstances of the case will admit of it, the exertions of the operator should coincide with the natural throes of labour, by which the extraction will be greatly facilitated.

If the mouth cannot be reached, the pressure should be made any where on the lower jaw. But great caution is required in making these attempts, as the jaw of a child is very delicate; and may from its structure be easily injured. If any obstacle arises from folds of the cord round the legs, thighs, body, or neck of the child, these must be disengaged in the easiest manner possible.

possible. The contraction of the orificium uteri round the child's neck rarely proves the cause of resistance, except when the feet are pulled down too early, or in premature labours, when it may be gently stretched with the fingers, and further endeavours should be delayed for some time.

If the head does not yield after repeated efforts, in the manner directed, there is a necessity for resting some time ; as the head does not so soon collapse, and mould itself to the passage, in preternatural as in natural presentations. Whatever obstacle prevents it from advancing, it will still be prudent to rest for a little ; and, after a proper interval, renew our exertions : by thus alternately resting, and attempting to extract, the head will yield, and the child may be saved, after a considerable exertion of force has been used.

If the cause of resistance appears to be the extraordinary bulk of the head from hydrocephalus, the teguments may be burst-ed by the force of pulling, by thrusting a  
finger

finger through them, or by perforating the cranium with the perforator.

If, by the violent exertions employed, there is hazard of dislocating the cervical vertebræ, and of separating the body from the head, the operator must cautiously desist from pulling, and wait for the contractions of the uterus, employing his exertions during the time of the pains only.

If the head is of a monstrous size, or the pelvis very faulty, the former must be opened with the perforator at the basis of the skull, and the extraction afterwards performed with the crochet.

The fingers of the operator introduced into the mouth, or pressing on the upper or lower jaw, will be sufficient to accomplish the extraction of the head, where there is no great disproportion between it and the pelvis; so that the forceps will seldom be necessary. In more difficult cases, the crotchet must be used.

*When one foot only is protruded into the Vagina,* the other is sometimes detained by catching on the pùbes, and, if easily come

at,

at, should be brought down, always observing to humour the natural motion of the joint; but if the leg should be folded up along the child's body, or of difficult access, the attempt is not only troublesome, but dangerous, as there is hazard of tearing the uterus. It is less necessary, as the breech will be either naturally forced down by the assistance of pains, or by gently pulling at one leg only.

*When one or both knees present,* the legs often cannot be brought down, till the breech be gently raised and pushed a little back in the pelvis.

*If the feet should offer along with the breech,* it must be cautiously thrust back, while the former are secured and brought down, till the position be reduced to a footling case, and the delivery otherwise managed as already directed.

§. 2. *Presentations of the Breech.*

Although the breech present, the situation of the infant, relating to the mother, is different in different cases.

The varieties are,

The fore-parts of the child placed to,

1<sup>st</sup>, The pubes of the mother ;

2<sup>dly</sup>, To the sacrum ;

3<sup>dly</sup>, To either side.

Sometimes the presentation of the breech may be discovered before the membranes break ; but afterwards, with more certainty, by the meconium of the child accompanying the waters ; and by feeling the sulcus between buttocks, the thighs, or the genitals of the child.

In whatever manner the breech presents, the delivery should be submitted to nature, till the child be advanced so far that the breech and feet are protruded without the parts.

If the fore-parts of the child be placed anteriorly or posteriorly to the mother, when the infant is so far advanced that it can be laid hold of and wrapped in a cloth, the mechanical turns must be made, and the delivery

delivery finished, as directed in footling-cases.

There is much less hazard, in general, in allowing the child to advance double, than in precipitating the extraction, by pushing up to bring down the feet, before the parts have been sufficiently dilated ; a practice difficult and troublesome to the operator ; painful, and sometimes dangerous, to the mother ; and by which the child is exposed to the risk of strangulation, from the retention of the head after the delivery of the body. If the child be small, though doubled, it will easily pass in that direction ; if large, though the labour should be painful, the natural throes are less violent and dangerous than the pain occasioned, first, by introducing the hand with a view to turn, and, 2dly, by pushing up the child in order to lay hold of the feet and bring them down. If the child advances naturally, it will be less exposed to suffer ; if it should not advance, there is this advantage, that the parts of the mother will be properly prepared, when the strong pains are abated,

ted, for allowing the hand to be passed into the pelvis, to raise up the breech, search for the feet, bring down one or both, and deliver.

The propriety of this mode of treatment is supported by the pains being often stronger in breech-cases, than in natural labour: but it cannot be followed when the mother is weak, and the pains are trifling; when she is affected with floodings or convulsions; when the child is of a very large size, or the pelvis narrow; when the umbilical cord falls down, and is compressed between the thighs of the child, or between the child and the pelvis, and cannot be reduced above the presenting part.

The prolapsus of the navel-string generally accompanies that position of the breech where the child presents with its fore-parts to the belly of the mother. Sometimes the cord can be reduced, and the child's life preserved: but if the breech be far advanced, and the pains strong, it is not only difficult, but hazardous, to push up the child; whose life can seldom, in such circumstances,

ces, be preserved. It is better, therefore, to let the child come as it presents, if there are pains, than to hazard the more important life of the mother, by attempting to push up and turn. But, in all doubtful and perplexing cases, when there is time for it, the advice of a more skilful practitioner ought to be taken.

When the breech is so far advanced, that a finger or two can be passed under the bended thigh, as far as the groin of the child, assistance may be given with advantage, by alternately pulling, first at one side, then at the other, in time of the pain, provided the circumstances of the case require interference. But great care ought to be taken not to mistake the shoulder for the breech, and not to injure the child by violent pulling, or unequal pressure. Such errors have often been committed, and the consequences have been fatal.

In breech cases, the greatest caution is necessary, when the genital parts present, lest the child should be injured by too frequent touching.

## SECTION II.

PRESENTATION OF THE ARM, SHOULDER, SIDE,  
BACK, OR BELLY.

**I**N the former cases delivery may sometimes, when the child is small, be accomplished without manual assistance; but in those at present under consideration, no force of pain can make the infant advance in that awkward position; and, without proper aid, both mother and child would perish.

If a skilful practitioner have the management of the labour from the beginning, the child may generally be turned, in the worst position, without much difficulty: but when the waters have been for some time evacuated, and the uterus is strongly contracted in a longitudinal form round the child's body, turning will be difficult and laborious to the operator; painful and dangerous to the mother. For it ought to be considered, that the great difficulty and hazard of turning are chiefly owing to the resistance  
which

which the uterus gives; not so much to the position of the fœtus. When the water, in whole, or in part, is retained, there is easy access to reach the feet, and bring them down; but in proportion as the water is evacuated, the uterine cavity becomes less spacious, and turning is rendered both troublesome and dangerous.

It was the old practice, in preternatural labours, to endeavour to make the head present; but, on account of its bulk, it could seldom be done; and the force employed in making the attempt was often attended with fatal consequences. The method of delivering by the feet is one of the most important modern improvements in the practice of midwifery; an improvement to which many thousands owe their lives.

When the child lies in a transverse position, the management is very simple. We must gently pass the hand into the uterus, to search for the feet, bring them down with the utmost caution, and finish the delivery as directed in footling cases; for which purpose the following rules should be observed.

*Rules for Turning the Child.*

1. The woman must be placed in a convenient posture, and kept steady by assistants, that the operator may be able to employ either hand, as the circumstances of the case may require.

2. The best posture for the operator, in general, as well as the patient, is the left side, with her breech placed over the edge of the bed, and her knees kept separate with a folded pillow.

3. The orificium uteri should be enlarged so much as to allow the hand to pass freely; and the strong pains should have abated, before any attempt be made to deliver.

4. It is of great consequence to endeavour to learn the position of the child, and to attend to the shape and dimensions of the pelvis, before attempting to make the delivery.

5. In preternatural cases, every possible means ought to be used to preserve the membranes as long as possible. If they should  
break

break before the hand is introduced, and the state of the parts will admit of it, the hand should be quickly after passed ; part of the water being thus retained, the operation of turning will be greatly facilitated. But if the waters be drained off, and the uterus rigidly contracted round the body of the child, a full dose of laudanum should be given, previous to any attempt to procure delivery.

6. The hand and arm of the operator must be lubricated with pomatum, before attempting to introduce it into the vagina ; the fingers must be gathered together in a conical form, and the resistance of the os externum be overcome by very slow and gradual degrees.

7. In passing the hand into the uterus, it ought to be done in the gentlest manner, but with a certain degree of resolution and courage. The passages should be well lubricated with butter or pomatum ; the line of the vagina and pelvis carefully attended to ; the movements of the operator must be slow and gradual ; and thus, by giving time,

the utmost rigidity in the soft parts may be overcome.

8. The hand ought to be introduced only during the remission of pain ; when the pain comes, the operator should stop, otherwise there is great hazard of pushing the hand, or some part of the child, through the substance of the uterus.

9. The hand should, if possible, be introduced by the fore-parts of the child, as the feet are generally folded along the belly ; and both feet, if easily come at, should be laid hold of.

10. In pushing back any part of the body of the child to come at the feet, the palm of the hand, or broad expanded fingers, must be used. This part of the operation should be performed always during the remission of pain. And the same rule is to be observed in bringing down the legs ; but in making the extraction of the body, when the legs are in the proper line of direction, the efforts of the artist ought always to cooperate with those of nature.

11. As the breech advances through the  
pelvis,

pelvis, the child, if not already in the proper position, must be gradually turned with the fore-parts to the sacro-iliac syncondrosis of the mother.

12. Practitioners in midwifery should be cautious of giving credit to any report of the child's death; for most of the symptoms are fallacious. Children are often born alive, when there is little reason to expect it; therefore, in pushing up, bringing down the legs, or extracting the body, the child should never be treated roughly, but handled with the greatest delicacy.

13. When the hand is within the pelvis, and there is a necessity for passing it pretty high in the uterus, to search for the child's feet, the proper direction is not precisely in the line of the navel, as DR SMELLIE advises, but inclining it a little to one side, to avoid the prominent angle of the sacrum, by which more room will be gained, and less pain given to the woman; for the womb presses strongly there.

14. When the hand is interrupted in passing,

sing, by the spasmodic contraction of the uterus, we must desist from further insinuation, till the constriction of the uterus is somewhat abated.

15. If the hand cannot pass beyond the presenting part of the child, to come at the feet, instead of thrusting back the presenting part with violence, it should be, as it were, first raised up in the pelvis, and then moved to the opposite side. By this means difficulties, otherwise insurmountable, may be removed, and great danger often prevented.

16. When both feet cannot readily be obtained, the practitioner should content himself with one foot; and after securing it with a ligature, he may make a cautious attempt to bring down the other foot.

17. But if the second foot cannot readily be found or brought down, the child may often be extracted with the utmost safety by one foot only, provided he proceed slowly in the operation.

18. When the foot or feet begin to protrude

trude without the os externum, let them be covered with a soft cloth, and the advantage of the natural pains improved, to assist the extraction.

19. In all preternatural labours, when the child is delivered as far as the breech, the stricture of the navel-string should be removed by gently drawing it down a little, as already directed.

20. As the breech advances towards the os externum, the proper means for guarding against laceration of the perinæum must be attended to.

21. The arms are to be relieved, and the head extracted, in the manner already directed in footling cases.

Children delivered by the feet are often still-born. Besides, the body has been sometimes separated from the neck, and the head left behind in the cavity of the uterus; an accident which can only happen by the rashness, negligence, or unskilfulness of the practitioner.

The causes chiefly are, 1/<sup>st</sup>, The putrid state of the child's body, in consequence of

its death; *2dly*, The neglect of the operator to make the proper turns when extracting the body; *3dly*, The narrowness of the pelvis, or bulk of the child's head.

To prevent this accident when the child's body is putrid, the operator should never attempt to extract the head till two fingers be introduced into the mouth; and, by pulling down the jaw, and pressing on the shoulders, while an assistant gently presses on the woman's belly, and the woman herself bears down in the time of a pain, the extraction may generally, unless when the pelvis is narrow, be safely effected.

If the head should be actually separated and left behind in the womb, and cannot be extracted by introducing two fingers into the mouth, and waiting for the assistance of pains, and the forceps should fail, the crotchet must be used. The method is to keep the head steady by the pressure of an assistant on the woman's belly, till the head is opened with the perforator, and extracted with the crotchet according to the rules already given.

By

By attending carefully to the above rules, lacerations of the uterus, floodings, convulsions, inflammation, and their consequences, may be prevented, and the child's life often preserved, even when it presents in the most awkward position.

We proceed to consider a few particular cases.

Case 1. *The Arm Presenting*.—This position occurs frequently. It is of some consequence to form a general notion how the child lies, before the operator sits down to deliver. The right hand, by a little attention, may be readily distinguished from the left, if we lay hold of the child's hand in the same manner as in shaking hands.

It is often in the power of a skilful practitioner to prevent the hand from coming down, or to reduce it when it protrudes: But if the arm be forced into the passage so low that the shoulder is locked in the pelvis, it is needless to give the woman the pain of attempting the reduction, as the hand of the operator can be passed into the  
uterus

uterus by the side of the child's arm, which will, of course, return into the uterus, when the feet are brought down into the vagina. As the head, in this case, cannot easily be made to present; in order to make the delivery by turning the child, the hand and arm of the operator, well lubricated, must be conducted into the uterus by the side of the child's arm, along the breast and belly of the child, towards the side of the pelvis opposite to where the head lies. If any difficulty occurs in coming at the feet, the hand already introduced must be withdrawn, and the other passed in its stead. If still the hand cannot easily be pushed beyond the child's shoulder and head, the presenting part must be gently raised up, or cautiously shifted to a side, that one or both feet may be taken hold of, which must be brought as low as possible, pushing up the head and shoulders, and pulling down the feet, alternately, till they advance into the vagina, or so low, that a noose or fillet can be applied; and thus, by pulling with the one hand, by means of the noose, and pushing with the other,

other, the feet can be brought down, and the delivery finished in the most complicated and difficult cases.

The method of forming the noose is by passing the two ends of a piece of tape, or garter, through the middle when doubled; or, if the garter be thick and clumsy, by making an eye on one end, and passing the other extremity through it. This must be mounted on the points of the fingers and thumb of the hand of the operator, who must take hold of the child's foot, flip it over the foot and ankle, and secure it by pulling at the other extremity.

Case 2. *The Shoulder*.—Great care ought to be taken, that it may not be mistaken for the buttock. The shoulder will feel harder and more bony than the full, thick, fleshy, buttock; a mark which may be taken along with the others formerly mentioned in Breech Cases.

Though the child should originally present with the shoulder, when the orificium uteri is dilated, the arm, if not prevented, may

may readily be forced, by the repeated efforts of the labour-throes, into the passage. In proportion as the presenting part advances, and the shoulder becomes locked in the pelvis, delivery by turning will be more difficult and hazardous.

Except the child be of a very small size, and the hand pressed close to the side of the head, it is impossible for the head and arm to pass together; it is, therefore, cruel and barbarous to pull the arm, in order to deliver the child in that way. The arm, in feet presentations, has, by the ignorance of the practitioner, been often torn from the body (of which I have lately seen an instance), and the mother has died in the attempt.

Case 3. *The Side*.—This is discovered by feeling the ribs.

Case 4. *The Back*.—This is discerned by feeling some part of the spine, or backbone.

Case

Case 5. *The Belly* is known by the soft yielding substance of the part, and by the falling down of some portion of the umbilical cord.

These three presentations, viz. *The side, back, and belly*, more rarely occur, as the uterus will, with difficulty, admit of such positions.

When any of these parts do present, they seldom advance much beyond the brim of the pelvis; and the child is, in general, as easily turned as in other presentations which more frequently occur.

The belly, from the difficulty with which the legs can be bended backwards, unless the child be flaccid, putrid, or immature, will very seldom directly present; if it does, it will be early and easily discovered by the prolapsus of the cord, and there will be no great difficulty to come at the feet, and deliver.

The rule in all these four cases is, to insinuate the hand into the uterus, in the gentlest manner possible, when the state of the parts will admit of it, before the uterus be contracted

tracted in a longitudinal form, to search for the feet, bring them down, and deliver, agreeably to the directions already given for that purpose.

## SECTION III.

ONE OR BOTH ARMS PRESENTING, AND THE HEAD FOLLOWING NEARLY IN THE SAME DIRECTION.

WHEN the child lies with the arm or shoulder presenting, and the head more or less over the pubes, or resting on one side at the brim of the pelvis, the feet towards the fundus uteri, the waters evacuated, and the uterus closely contracted in a longitudinal form round the child's body, it forms one of the most difficult cases of preternatural labour\*.

When the arm protrudes in this manner, it ought, if possible, to be reduced, and the head brought down into the pelvis; for it is often equally difficult and dangerous to deliver

\* The history of an interesting case of this kind is detailed, p. 104. in Dr James Hamilton's *Select Cases in Midwifery*.

deliver by the feet, and sometimes utterly impracticable.

A skilful practitioner, who has the management of the delivery from the beginning, will sometimes be able to prevent the protrusion of the arm ; and if this is to be attempted, it should be as soon as possible after the rupture of the membranes. If he fails, and the arm should be forced down, the earliest opportunity should be taken to reduce it. If successful, it will prevent much future trouble ; it will be a happy circumstance for the mother, and may be the means of preserving both her life and that of the child. With this view, when the position of the woman is adjusted, the hand of the operator, well lubricated, should be insinuated through the vagina into the uterus, conducted by the child's arm, till it reaches as far as the axilla or shoulder. The shoulder must then be raised up, and shifted, as it were, obliquely, to the side of the pelvis, opposite to that to which it inclines. By this means the position of the child will be somewhat altered, and the arm drawn up  
within

within the vagina, so that it will be afterwards no difficult task to reduce it completely. But should this method fail, an attempt may be made to push up the forearm at the elbow; and, in bending it, great care must be taken to avoid over-straining, or dislocating the joint. These attempts must only be made in the intervals of pain: when the pain recurs, the operator ought immediately to desist; for by pushing in time of the pain, or in an improper direction, the uterus may be torn, and the most fatal consequences soon ensue.

In whatever manner the reduction of the child's arm shall be accomplished, if any method proves successful, it must be retained in the uterus by the hand of the operator, till the child's head, by the force of the next pain, fills up the pelvis, and prevents its return; otherwise the arm will be protruded as often as it is reduced.

But if the orificium uteri be not sufficiently opened to admit of the reduction of the protruding arm with safety; if, as the arm advances, the head reclines to one side  
of

of the pelvis, the throes of labour are violent, and the intervals short ; it would then be as dangerous to the patient as difficult to the operator, to attempt delivery by manual exertions: for the spasmodic contractions of the uterus counteract every artificial effort; and if much mechanical force be used, the uterus is in hazard of actual laceration. In these circumstances, regardless of the anxiety of the patient, or the importunities of the attendants, the operator should desist for some time from further efforts ; a large dose of liquid laudanum should be given, as from 50 to 80 drops ; and when the parts are sufficiently dilated, and the strong forcing pains abated, his attempts should then be renewed. His object should then be to insinuate his hand beyond the presenting part to come at the feet, bring them down, and deliver. If these attempts should fail, he may endeavour to alter the position of the child, by fixing a noose on the arm, and pulling by it. More easy access may be then obtained to the anterior parts of the child, by which the hand can be conducted to the

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feet.

feet; a mode of practice I have successfully employed in repeated instances, where, *otherwise*, I should have been obliged to destroy the child. But, if every method should prove ineffectual, either to reduce the arm or bring down a foot, by turning round the child, *by a fillet fixed on the arm*, in the manner recommended, and the woman's life is in danger, the head of the child, if it can be reached, must be opened; after a proper interval, a crotchet introduced; and the extraction made by pulling at it and the protruded arm.

Should the head be without reach of the perforator, the crotchet must be fixed on the trunk or thorax, with a view to bring down the breech or feet; by securing a firm hold of the arm, and pulling by the crotchet, the delivery must, in that manner, be accomplished. This practice should only be had recourse to when the pelvis is faulty, or the patient's life in immediate danger.

In the longitudinal contraction of the uterus, when an arm presents, and the  
shoulder

shoulder is advanced in the passage, so that the feet cannot easily be come at, DR DENMAN advises “to pull the body lower down by the arm, and the difficulty will be lessened, or removed. There is happily (he adds), no necessity of turning the child in these circumstances; for it will be born by the effect of the powers of Nature only. In such cases, the child does not come double, but the *breech* is the first part delivered, and the *head* the last, the body turning upon its own axis.”

He adopts this opinion from four cases which occurred in his own practice, and several similar histories related by others; in all which, however, the child was dead.

He therefore infers, “That, in cases in which children present with the arm, women would not necessarily die undelivered, though they were not assisted by art.”

He concludes his observations with this important remark :

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“The

“ The benefit we are to derive in practice from the knowledge of this fact is, that the custom of turning and delivering by the feet, in presentations of the arm, will remain necessary and proper in all cases in which the operation can be performed with safety to the mother, and give a chance of preserving the life of the child ; but, when the child is dead, and when we have no other view but merely to extract the child, to remove the danger thence arising to the mother, it is of great importance to know, that *the child may be turned spontaneously by the action of the uterus* \*.”

On this opinion I offered the following observations in the editions of this work preceding the year 1796.

“ DR DENMAN’S remark is new to me. In a case where the powers of nature have been

\* See DR DENMAN’S Aphorisms respecting the Distinction and Management of Preternatural Presentation.—The substance of that publication is now comprehended in Dr Denham’s Introduction, &c.

been usually considered as desperate, it is new, perhaps, only because the practitioner has thought it useless to wait for them. But though curious, as it shows what Nature in her struggles can perform ; and though surprising, as it apparently contradicts the laws of motion ; it seems to me unnecessary, as in the numerous arm-presentations which I have attended, the child has for the most part been preserved, and the woman has seldom suffered any material injury from the delivery. I have therefore continued to practise the method which I have just recommended ; and, in the most intricate presentations, have generally succeeded in making the delivery, by fixing a fillet on the arm, and altering the position in the manner mentioned, when every other method had failed. I have never yet known a case to occur where the pelvis was tolerably proportioned, in which I could not either obtain access to the feet to deliver by turning, or reduce the arm and bring down the head ; and have, in several cases,

successfully turned where the pelvis was considerably distorted \*.

“ It may be necessary, however, to state the principles of this operation, that we may be aware how far to trust the unassisted efforts of the constitution.

“ The longitudinal contraction of the uterus is one of those blind and indiscriminate attempts which Nature sometimes makes to free herself from a burden. When her powers are exhausted, these efforts are diminished, and the uterus is relaxed. In these circumstances, then, if we can fix the arm,

\* “ In presence of the Gentlemen who attended my Lectures last summer (1782,) I delivered a woman in the public lying-in ward, Royal Infirmary ; the circumstances of whose case were as follow :

The arm of the child presented, and had been in the passage, with the waters drained, from the preceding evening. The pelvis was considerably distorted, and the crotchet had been used in her former deliveries. The woman is of an under-size, of a feeble constitution, and the passages were so tight as to cramp the hand when introduced into the pelvis. By gradual stretching, and gentle insinuation, I with some difficulty reached a foot, and accomplished the delivery without the assistance of any instrument.”

arm, the body will of itself turn as on an axis ; and the *heavier* part, or the breech, will come downward and be delivered. The arm is *fixed* by drawing down the shoulder ; but it will be obvious, that the natural falling down of the breech will immediately draw it back again ; and it is in this way that the child does not *ultimately* come down double. This operation can be easily imitated on machinery, if the aperture is conical to fix that part which represents the arm ; and it is in this way clear, that the contradiction to the laws of motion is apparent only.

“ In the manner we have just stated, this mode of delivery may seem to be preferable ; but various circumstances diminish its advantages. DR DENMAN has very properly limited it to the delivery of a dead child, and we may add a well proportioned pelvis : but even there we exhaust the powers of Nature, without an adequate advantage ; especially if we reflect, that, in this exhausted state, an inconsiderable increase of the usual discharges may prove fatal.”

Since the above was written, several cases have fallen under my observation, which confirm these hints.

‘The spontaneous evolution,’ as my son has remarked \* ‘can only take place where the child lies in a particular situation, viz. where the action of the uterus cannot be exerted on the presenting part, or where that part is so shaped that it cannot be wedged within the pelvis.’

When the child is in the position alluded to, if there be strong uterine contractions, the breech is forced down; and, therefore, the concurrence of violent labour-throes is required.

From this view of the subject, it must be obvious, that a practitioner may always be able to judge whether the evolution be likely to take place, and hence may know when to assist the efforts of nature, and when to interpose the interference of art.

*When both arms present,* the delivery must be conducted much in the same manner as  
when

\* Select Cases in Midwifery, p. 111.

when one only presents. The former case is nearly as easily managed as the latter, as the head seldom advances far in that position, being locked in the pelvis, as it were, by two wedges ; so that the arms can either be reduced, with a view to bring down the head, or there will be easy access to come at the feet, to bring them down and deliver.

Should it so happen, however, that the head, with the hand at each side, is jammed within the cavity of the pelvis, before the practitioner be called, all violent attempts to reduce the hands ought to be avoided, and the vectis forceps or crotchet, according to circumstances, should be employed.

CHAP.

## C H A P. IV.

## COMPLEX LABOURS.

**U**NDER this title are comprehended all cases of labour that cannot be referred to any of the species which have been already considered in this work.

It is not proposed to notice every labour that may, with propriety, be styled complex. The treatment of the principal cases being detailed, the management of the others may be easily directed by the judgment of the practitioner.

For these reasons, we shall consider cases,

- 1<sup>st</sup>, Of plurality of children.
- 2<sup>dly</sup>, Of monstrous productions.
- 3<sup>dly</sup>, Of uterine hæmorrhagy.
- 4<sup>thly</sup>, Of convulsions.
- 5<sup>thly</sup>, Of ruptured uterus ; and,
- Lastly*, Of prolapsus of the umbilical cord.

SECTION I.

PLURALITY OF CHILDREN.

ALTHOUGH women commonly produce one child only at a birth, yet the uterus is capable of containing several.

Cases of twins often occur, of triplets seldom, of four children very rarely \*, and there are few instances of five fœtuses at one birth, notwithstanding the fabulous histories which have been related by credulous authors.

DR GARSHORE, in a late paper in the Transactions of the Royal Society, has, however, collected one or two well authenticated

\* Thirteen years ago (1782) I was called to a woman in this city, who brought forth four children at a birth, between the 6th and 7th months. One of my Pupils was sent when the message came for me, and before my arrival she was delivered of two. Three of the children were born alive and lived some hours. This is the only instance of the kind ever known to have occurred in Edinburgh.

ticated cases of five children at a birth, and has made some valuable remarks on plurality of children at a birth, to which we refer.

It is very difficult to judge of the existence of twins or triplets, from appearances previous to delivery ; for all the signs enumerated are fallacious.

When there is reason to suspect that there is another child, after the delivery of the first, it ought to be ascertained by passing the hand over the abdomen ; or, if that is insufficient, by the introduction of the hand into the uterus.

The symptoms to which practitioners have chiefly trusted, after the birth of one child, are,

1<sup>st</sup>, The diminutive size of the child, and the waters being disproportioned to the distention of the gravid uterus.

2<sup>dly</sup>, The umbilical cord, after it is divided, continuing to bleed beyond the usual time.

3<sup>dly</sup>, The recurrence of regular labour.

4<sup>thly</sup>,

4<sup>thly</sup>, The retention of the placenta.

5<sup>thly</sup>, The abdominal tumor not being sensibly diminished between the stomach and umbilicus.

All these symptoms are seldom united; and several of them are, by themselves, fallacious: for the placentæ of twins are often distant from each other in the uterus, and so loosely connected to it, that one may entirely separate before the second child be born; so that labour-pains will sometimes cease for two or three days; and there is the same interval between the births of the children.

The most certain method, therefore, is to attend to the usual diminution of the belly, and in doubtful cases, to introduce the hand into the uterus; but this will very seldom be found necessary.

The position of twins or triplets is commonly that which is most commodiously adapted to the uterus, and which will occupy the least room; one child often presents naturally; the other, or others, by the feet or breech; sometimes both, or all,  
present

present naturally : at other times the position is cross ; so that the delivery must be regulated by the presentation.

With regard to the management, opposite sentiments have been entertained.

In some instances, natural pains, after the delivery of the first child, soon come on. The membranes will then be quickly forced down ; and the presenting part of the child may be readily felt through them ; but if the presentation of the child should be doubtful to the touch, the practitioner ought immediately to place the woman in a proper position, and gently insinuate his hand, by the side of the membranes, into the uterus, and examine how the child lies. If the head or breech present, it is only necessary to break the membranes, withdraw the hand, and leave the child to be expelled by the natural pains. If the feet are felt through the membranes, these ought to be ruptured, the feet taken hold of, and brought into the passage. The delivery must be otherwise managed as directed in footling cases,

cases, carefully observing not to neglect the proper turns in extracting the body.

If any other part than the head, breech, or feet, should present, the latter must be searched for through the membranes, and brought down into the passage.

When the uterus is very much distended, it, in some degree, loses its power of contraction. From this cause, the pains are often less strong and forcing, and the labour is more tedious, in twins and triplets, than when there is but one child; hence a considerable length of time, as several days, in some instances, intervenes between the birth of the different children. In this interval, the woman is apt to suffer from impatience and anxiety. Floodings frequently come on; and the labour is more painful and hazardous, in proportion as the time of delivery is protracted. It may, therefore, be recommended to practitioners as a general rule, if labour-pains do not naturally recur soon after the birth of the first child, to pass the hand gently into the uterus, break the membranes,

branes, and manage the delivery according to the presentation.

As this subject has given rise to a variety of opinions among authors, we shall add, for the instruction of young practitioners, a few rules, which include the whole directions necessary for the management.

*Rules for Delivery, in Cases of Twins,  
Triplets, &c.*

1. If a second child be suspected, a ligature ought immediately to be made on the end of the umbilical cord next the mother (should that not have been already done) lest the two placentæ being connected, the cord should continue to bleed. A case of this kind occurred to MR PERFECT.

2. When it is ascertained that there is another child, the practitioner should stay with his patient, as if waiting for the separation of the placenta, and carefully watch, lest a flooding should occur.

3. A

3. A gentle compression ought to be made on the abdomen, which must be gradually tightened, as the uterine tumour subsides.

4. If pains soon come on, and the child presents in a position in which it can advance without manual assistance, it should be allowed to be expelled by the natural pains, provided the patient be not much exhausted.

5. If labour-pains do not occur within the space of an hour after the birth of the first child, or if the second child be found to present by any other part than the head, or though it do present naturally, if the woman have undergone much fatigue during the previous process of labour; it then becomes necessary to have recourse to the operation of turning the second child. This ought to be proceeded to without further delay; for otherwise several untoward accidents may happen.

6. After the birth of the second child, the state of the uterus should be again carefully  
B b examined,

examined, lest there be another child remaining. Should this prove to be the case, the patient must be allowed to rest for half an hour if there be no urgent symptom; and then the operator is to extract the third child by rupturing the membranes, bringing down the feet, &c.

7. When another child is discovered, no attempt ought to be made to remove the placenta, before the delivery of the remaining child or children; such attempts would expose the woman to the hazard of flooding, which might end fatally before the uterus could be emptied of its contents.

8 The placentæ of twins and triplets are often connected, and adhere at the edges, though each child has its distinct membranes and water.

When they adhere at the sides, they separate, and are expelled together, after the birth of the last of the children. But when they are attached in different portions to the uterus, the placenta frequently follows the birth of that child to which it belonged, before the second labour ensues.

9. The

9. The placentæ of twins, or triplets, generally separate easily, provided time be given for the contraction of the uterus. Each cord should be cautiously pulled, sometimes alternately, sometimes pulling by both, or by all at once, desiring the woman to assist gently by her own efforts.

When the bulky mass advances as far as the os tincæ, the resistance occasioned by the contracting orifice must be removed, by the introduction of a finger or two within the passage, to bring down the edge: the substance of the cake is then to be grasped firmly, and the whole entirely extracted.

When they adhere in distinct portions, they must be separated, one after another, and removed.

10. If flooding should occur, or any of those obstacles to expulsion formerly mentioned, the hand must be conducted into the uterus, and the separation and extraction of the placentæ accomplished, agreeably to the directions already given.

## SECTION II.

## MONSTROUS PRODUCTIONS.

THESE are of various sizes and forms; and, unless very small, the presentation favourable, and the woman well made, will prove the cause of a difficult and troublesome delivery. Sometimes a child is monstrous, from a preternatural conformation of parts; such as a monstrous head, thorax, abdomen, &c.; at other times, there is a double set of parts, as two heads \*, two bodies with one head, four arms, legs, &c. But such appearances very seldom occur in practice; and when they do, the delivery must

\* I was some time ago favoured with the history of the delivery of a child with two heads, and a plate exhibiting its appearance after birth, by Dr Wicksted of Nantwich; and have lately received, from Mr Johnson surgeon at Dunbar, a cast, in stucco, of a foetus born with a soft tumour attached to the superior part of the cranium, resembling in shape and size a second head.

must be regulated entirely according to the circumstances of the case. A large head, thorax, or belly, must be opened. If two bodies united, or one body with supernumerary limbs, form too bulky a mass to pass entire, they must be separated. If the posture be unfavourable, it must be reduced when practicable; otherwise the extraction must be made with the crotchet, in the best manner the particular circumstances of the case will admit of.

## SECTION III.

## UTERINE HÆMORRHAGY

**FLOODINGS**, as already explained, proceed from a separation of some portion of the placenta, or spongy chorion, from the internal surface of the uterus. But the most dangerous hæmorrhagies arise from a separation of the cake, when attached to the cervix, or over the orificium uteri\*.

B b 3

Floodings,

\* See the article *Flooding*, in diseases of pregnancy.

Floodings, before the seventh month of gestation, may be often checked by the management formerly directed ; after which period, however, there is always considerable danger. And as it is sometimes necessary to deliver even when no part of the placenta can be reached with the finger, the constant attendance of the practitioner is requisite, and the utmost judgment to seize the proper time of proceeding.

There is hazard in attempting delivery too early, while the os uteri is close and rigid. When the woman, from loss of blood, is somewhat sunk, the uterine orifice is more relaxed and dilatable. The time can only be determined by constantly staying by the patient, and examining the state of the os uteri occasionally. In so critical a situation, the neglect of half an hour, or less, may be fatal to the mother and child.

The best practice in this case is, first, to wait on ; to give opiates at proper intervals ; and to keep the woman quiet and cool. If possible, delivery should never be attempted till the os uteri be dilated, and the  
membranes

membranes begin to protrude. The hand must then be passed into the uterus, the feet of the child taken hold of and brought down. The uterus now, being emptied of its contents, contracts, and soon stops the flow of blood, or prevents an excessive discharge: but it must always be a rule with the practitioner, to extract the body of the child after the feet are brought down, by very slow and gradual efforts; lest, from too sudden evacuation of the uterine contents, fatal faintings or convulsions might ensue. On this occasion, we think it incumbent on us to observe, notwithstanding a contrary opinion being maintained by some respectable practitioners, that whenever the patient is *much exhausted* from loss of blood, whatever be the cause, her life depends on *expeditious delivery alone*.

Flooding from the *attachment of the placenta at the orificium uteri*, will be sufficiently indicated by its alarming appearance and rapid increase, and by the soft pappy feel of the cake to the touch; though, when there is little dilatation of the os tincæ, it will

be necessary to introduce the whole hand into the vagina, in order more certainly to be able to feel the placenta with a finger introduced within the os internum.

In these unhappy cases, there is no method of saving the woman but by immediate delivery.

We are sometimes obliged to pass the hand at an opening made through the body of the placenta; but, if possible, the hand should rather be insinuated at the side of the cake, where the least portion is attached, to go into the uterus, break the membranes, search for the child's feet, bring them down, and deliver.

In some instances, before the orificium uteri can be sufficiently opened to admit the hand of the operator to pass, the whole cake will actually be disengaged and protruded; but the separation and expulsion of the placenta, previous to the birth of the child, is, for the most part, fatal to the mother: though some cases have occurred where the woman has been saved by nature; the pains  
being

being so strong, that the child has been forced down with the placenta before it.

Much of our success, in these alarming cases of flooding, will depend on *staying with the woman*, and trying the *dilatability* of the orificium uteri from time to time; for, after she is sunk to a certain degree, the muscular fibres of that organ lose their contractile power, the flow of blood increases, and, if neglected, she soon dies; so that the presence of the operator can only save her\*.

In cases so strictly critical and hazardous, two practitioners should, therefore, be called, for *one* ought to be in constant waiting.

#### SECTION IV.

##### CONVULSIONS.

CONVULSIONS sometimes occur during labour, as well as during the latter months of gestation.

Their

\* See Mr Rigby's valuable treatise on this subject.— See also Dr Leak's Observations on the Nature and Treatment of Uterine Hæmorrhagies before and after delivery; Practical Observations on the Child-Bed Fever, &c. 5th edition, p. 258.

Their approach is commonly announced by violent pain in the head or stomach, or by depraved or impaired vision, or by low delirium.

The event of all these cases is exceedingly precarious ; for sometimes the patient is suddenly carried off by a single fit.

When convulsions occur in a state of inanition, they may, in general, be considered as the harbingers of death. In such desperate cases, no remedy has hitherto been discovered. Animal transfusion has been suggested ; but experiments have not yet confirmed the propriety of having recourse to so extraordinary an expedient.

Convulsions in a plethoric, or in the ordinary state of system, although exceedingly dangerous, ought not to be regarded as hopeless ; for it is often in the power of the practitioner to remove the fits.

When the threatening symptoms of the disease are observed, blood-letting should be immediately performed, and the free admission of pure cool air into the bed-chamber ought to be encouraged.

Should

Should the fits nevertheless supervene, venæsection ought again to be had recourse to, and a suitable plug forced in between the jaws, to prevent the tongue from being injured. The exciting cause of the fits ought, if possible, to be removed.

Although, by these means, the violence of the fits may be moderated, or their recurrence apparently prevented, the safety of the patient cannot be depended on, until delivery be accomplished; and, therefore, that is to be effected by the most expeditious means.

## SECTION V.

### RUPTURED UTERUS.

THE uterus sometimes bursts during labour, and the child escapes partially or wholly into the cavity of the abdomen.

Than this, a more alarming or fatal accident cannot happen during parturition,

as

as both mother and child are commonly lost.

Certain symptoms, in general, precede this accident, and announce its approach.

These are excessively strong and frequent labour-throes, with violent excruciating pain on one part of the uterus, and resistance to the passage of the child. During one of these pains, the uterus gives way; and of this the patient is usually sensible. From that period, the labour-throes cease entirely.

The laceration is, in some cases, in a longitudinal direction; in others, in a transverse one; and in some oblique. A beautiful plate, representing the transverse laceration, has been published by DR DENMAN.

After the accident has happened, the symptoms generally unequivocally indicate what has taken place. The patient is instantly affected with vomiting; a discharge of blood from the vagina is observed. She becomes breathless; her pulse grows exceedingly quick; coldness of the extremities supervenes; and she gradually sinks; or sudden

sudden deliquium, or convulsions, being induced, she is at once carried off. On examination, it is commonly found that the former presenting part of the child has receded, or that the limbs of the infant can be felt distinctly through the parietes of the abdomen. In Scott's case, however, (already detailed), none of these pathognomonic symptoms occurred.

When laceration of the uterus is threatened, the object of the practitioner ought to be, to suspend, if possible, the labour-throes, and to remove the resistance to the expulsion of the child. With this intention, venæsection; and large doses of opium, are to be employed, and if the obstacle to delivery arise from deformity of the pelvis, the suitable means must be had recourse to.

Where the laceration has actually taken place, and the child has escaped into the abdomen, the only probable method by which the life of the patient can be preserved is immediate delivery.

Against this practice it has been objected, that any attempt to deliver must be productive of additional danger, by increasing the extent of the laceration.

Experience has, however, clearly proved, that even although the laceration be enlarged, the patient may recover; whereas it cannot be imagined, that a woman could survive, for any length of time, the escape of the infant into the abdominal cavity, if it were allowed to remain there.

The following case, first inserted in the edition of this work, published in the year 1784, affords a striking example of this observation.

“ABOUT four years ago, in a case where the shoulder of the child had presented in an oblique direction at the brim of the pelvis, the labour had been permitted to go on from the morning till the afternoon; the midwife had mistaken the presenting part for the breech; and the pains, after a few hours, became so strong and forcing, that she expected the child to be propelled with every throe. The patient soon after became restless; tossing and delirium ensued.

In this situation, I was called in. When the patient was properly secured by assistants, I passed up my hand with difficulty,  
and

and discovered a considerable rent in the uterus, towards the superior lateral part of the cervix, through which the shoulder and arm of the child had escaped into the cavity of the abdomen. Every attempt to insinuate the hand so high as to reach one or both feet, with a view to bring them down and deliver, brought on an impetuous gush of blood. I was therefore obliged to deliver with the crotchet; and more readily adopted this method, as there was little reason to expect, from the history of the case, that the child was alive; it really appeared to have died the day before. After the feet and body were extracted, the first arm was readily relieved; but in bringing down the other, though every possible precaution was employed, the wound in the uterus was increased downwards to the very edge of the os tincæ.

The placenta was removed by the introduction of the hand into the uterus, on account of flooding; and some portion of intestine reduced, which had been forced through the wound of the uterus, and protruded

truded at the vagina almost as far as the os externum. This gave me an opportunity of examining the rupture, which I found already amazingly diminished by the contraction of the uterus.

I gave the patient an opiate, and took my leave, not expecting again to have seen her in life. She slept comfortably that night; complained for a few days of an uneasy sensation like after-pains; on the fifth day, matter, in considerable quantity, appeared on the cloths at the pudendum, but without much pain. The discharge gradually lessened, and her recovery otherwise was nearly as good as if no extraordinary accident had happened \*.

If

\* This case, I am afraid, has been misunderstood by Dr Douglas of London, who has published the history of a similar one. The words to which I refer, and in which he has misrepresented my meaning, are, “the woman’s situation seemed to require her being immediately delivered, *which he at first attempted by turning.* In his trials for that purpose, he perceived the uterus to be ruptured, and that a shoulder and arm of the child had protruded into the cavity of the abdomen; but having reason to change his in-

“tention

If any additional evidence were required, to prove that delivery, after the uterus is ruptured, is not necessarily fatal to the mother, the reader might be referred to the histories of the case related by Dr DOUGLAS, and that which is inserted in the Select Cases in Midwifery, p. 138.

The mode of delivery must be varied according to the exigencies of each particular case. An incision through the parietes of the abdomen, as recommended by foreign practitioners, ought only to be had recourse to in those very rare cases where it is impracticable to bring the infant by any means through the natural passages.

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SEC-

“tention, with respect to turning the child, he delivered at last with the crotchet.” By this statement, it would appear that I had lacerated the uterus, whereas that accident had happened before I was called. How Dr Douglas has thus mistaken the case I cannot understand; for the history I have already given of it, is exactly the same which was published in the former edition of this work, to which Dr Douglas refers, and contains the real state of the case \*.

\* *Vide Observations on the Rupture of the Gravid Uterus, &c. by Andrew Douglas, M. D. Lond. 1789. p. 30.*

## SECTION VI.

## PROLAPSUS OF THE FUNIS UMBILICUS.

WHERE the umbilical cord is felt through the membranes, during the first stage of labour, the practitioner must watch carefully the dilatation of the os uteri, and, as soon as he can introduce his hand, he should (attending to the general rules formerly explained) pass it up and turn the child.

When any portion of the cord is protruded, after the rupture of the membranes, before a bulky part of the infant, there is hazard, unless the labour be very soon over, of the long continued pressure interrupting the circulation, and hence proving fatal to the child.

The threatening danger can, therefore, only be prevented by replacing the cord, and retaining it above the presenting part, till that part be forced so low as to occupy the whole space included in the pelvis, and thereby is made to hinder the future protrusion ;

trusion. The operation of turning has under such circumstances been advised ; but it is commonly very difficult to reduce the cord ; and after the liquor amnii is drained off, if the uterus be contracted on the body of the child, and more especially if there be frequent and strong labour throes, turning on this account is inadmissible, because there is great hazard of injuring the mother, while there is no absolute certainty of saving the infant.

The best general practice, therefore, in these cases, is to attempt in the gentlest manner to reduce the cord, during the absence of a pain, completely beyond the presenting part ; and to retain it so, by plugging up the passage, through which it had escaped, by means of a piece of soft linen rag. And, if these attempts fail, nothing else should be done until the presenting part be so low as to enable the practitioner to accelerate the delivery by means of Lowder's lever or the forceps.

When the cord is felt to be quite destitute of pulsation, to be cold and flaccid, such

a probability of the child's death is indicated, as to render it unwarrantable in the operator to adopt any means to accomplish the delivery which can in the most remote degree tend to injure the mother.

In some cases the infant is born alive, notwithstanding the protrusion of the cord, although no interference whatever be attempted.

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Many of the subjects considered in the preceding sheets cannot be perfectly understood without consulting plates. The superb work of DR HUNTER, and the useful, though far less splendid, one of DR SMELLIE, are referred to for this purpose. Some beautiful engravings, published by DR DENMAN, may also be consulted.













